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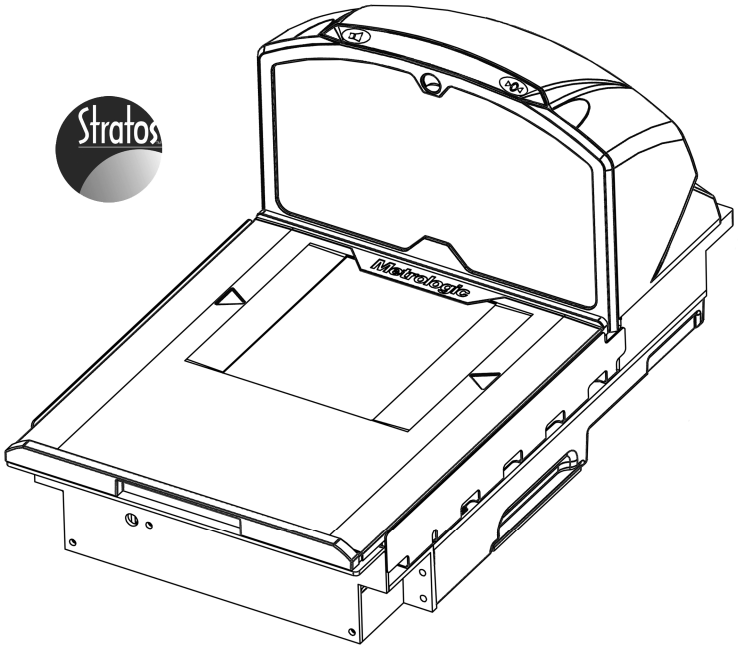
METROLOGIC INSTRUMENTS, INC.

MS2320 Stratos*H*® Scanner / Avery Scale
Installation and User's Guide



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INTRODUCTION

MANUAL SCOPE

This guide provides information on the installation, setup and operation of Metrologic's Stratos*H*®, MS2320 scanner/Avery scale unit. This guide is designed to be used in conjunction with Metrologic's MetroSelect® Configuration Guide (MLPN 00-02407*x*) and the MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034*x*).

Product manuals are also available for download in Adobe® Acrobat® file format at www.metrologic.com.

PRODUCT OVERVIEW

The Stratos*H* MS2320 is designed to meet the demanding needs of high volume supermarket and point-of-sale applications. With advanced features like 6-sided, 360° scanning, 5840 scans per second, a complex scan zone and advanced decoding software, this high performance in-counter scanner/scale model guarantees fast customer checkouts with minimal operator fatigue and stress. The MS2320 scanner/scale is equipped with a multitude of standard features including:

- Stratos***SCAN***™ – 6-sided, 360° scanning that minimizes product orientation
- Stratos***SPHERE***™ – Decoding software that reads poor quality and damaged bar codes
- Stratos***SYNC***™ – Horizontal and vertical scanning zones operate independently from one another
- RSS-14 Decoding – Decodes RSS-14, RSS Limited and RSS expanded emerging symbologies
- Flash ROM – Upgrade latest software enhancements on site
- Powered Aux Port – Connect hand-held scanner for large or bulky items
- Integrated Scale – Factory integrated Avery scale
- Loud Speaker – Three volume/seven tone settings can be heard in all environments
- Easy Configuration – Windows® based utility or simple bar code setup
- Fully Automatic – "No touch" infrared wake up from power save modes
- EAS Deactivation – Electronic Article Surveillance (EAS) equipped (EAS cable is an optional purchase)
- Field Replaceable Vertical Window – Quickly remove vertical window for cleaning or replacement
- Stratos***SCOPE***™ – Visual diagnostic indicator for easy to read feedback on scanner condition
- Stratos***SWAP***™ – Modular optics engine technology – small, pre-aligned, field replaceable modules
- Stratos***SCHOOL***™ – Operator training software

MODEL NUMBER DESIGNATION

MODEL NUMBER DESIGNATION

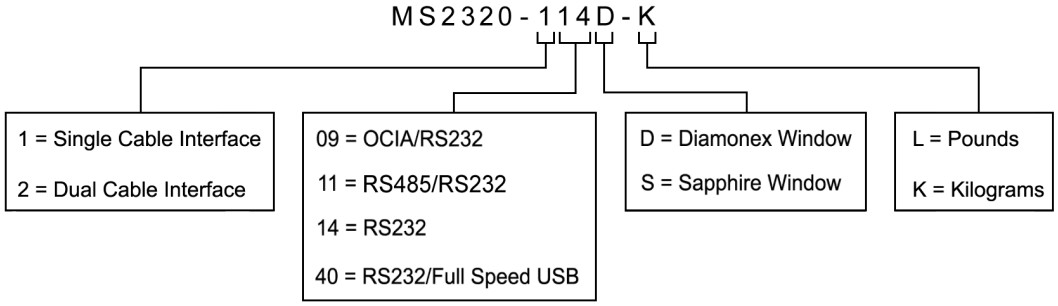


Figure 1. Model Number Designation

BASE KIT COMPONENTS

BASE KIT COMPONENTS

Part #	Description
MS2320-*	Stratos*H*® Series Scanner
* See model number designation above for detailed information on interface, window, cable and unit type.	
00-02407x	MetroSelect® Configuration Guide
00-02034x	MS2xxx Stratos Series Configuration Addendum
00-02048x	MS2320 Stratos*H* Scanner/Avery Scale Installation and User's Guide
Guides also available for download at www.metrologic.com.	

OPTIONAL ACCESSORIES

OPTIONAL ACCESSORIES

Part #	Description
57-57000x-N-3	RS232 Interface Cable, Straight Cord
57-57004x-N-3	RS485▲ Port 9 Cable, Straight Cord
57-57015x-N-3	OCIA Interface Cable, Straight Cord
57-57200x-N-3	USB Full Speed Communication Cable, Straight Cord, Locking 12V Plus-Power™ Type A
57-57006x-N-3	USB Full Speed Communication Cable, Straight Cord, Non-Locking Type A
57-57099x-3	LSO RS232 PowerLink AUX Cable with built in power jack, Straight cord
57-57000x-N-3	Dual Interface Cable, Straight Cord
52-52511x	24" EAS Cable

▲ *Applicable for IBM® Host applications.*

OPTIONAL ACCESSORIES	
Part #	**Description**
AC to DC Power Transformer - Regulated Output: +5V @ 1.5A +12V @ 1.5A	
46-46812	120V United States and Canada
46-46813	220V – 240V Continental European
46-46814	220V – 240V United Kingdom
46-46817	220V – 240V China
46-46928	220V – 240V Australia
Optional Remote Scale Display	
46-00248	Remote Scale Display (lb.)
46-00249	Remote Scale Display (kg.)

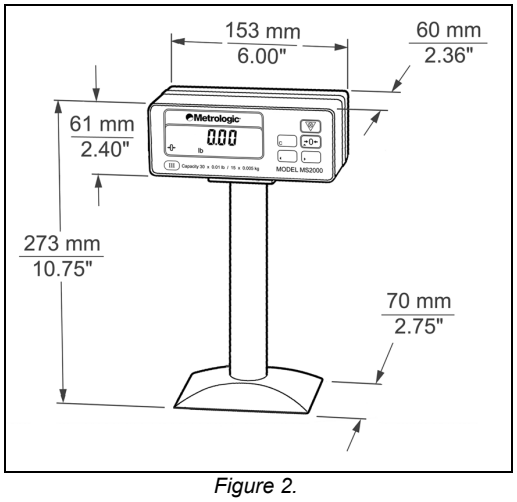


Figure 2.

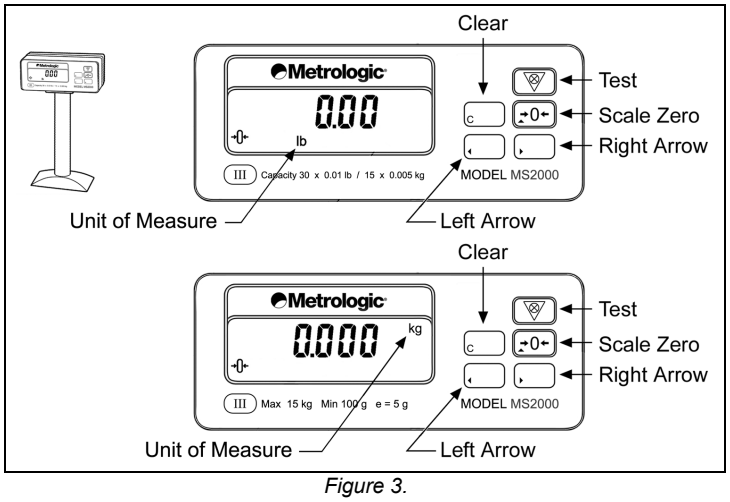


Figure 3.

REPLACEMENT PARTS

REPLACEMENT PARTS	
Part #	**Description**
⚠ Caution	Window types (Diamonex and Sapphire) are <u>not</u> interchangeable due to laser safety and/or scanner performance differences. To change window type, the scanner must be returned to the manufacturer for reconfiguration.
46-46889	Vertical Window
46-46806	Diamonex Platter – Full (Long) Size
46-46808	Sapphire Platter – Full (Long) Size

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call Metrologic's Customer Service Department at 1-800-ID-METRO or 1-800-436-3876.

GENERAL PRECAUTIONS

The following list includes general precautions to remember when handling the Stratos*H*.

DO NOT TURN the unit upside down with the platter in place.

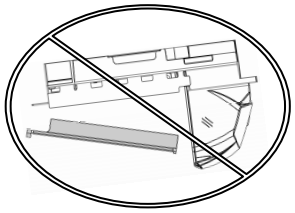


Figure 4

DO NOT PRESS on the window in the placement platter or the vertical window frame.

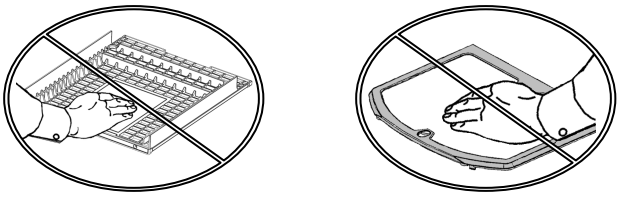


Figure 5

PLATTER REMOVAL
No hardware or tools are required to remove the platter / horizontal scan window (see Figure 6). Refer to the Maintenance section of this manual for additional information on platter replacement.

⚠ *See caution statement on page 3.*

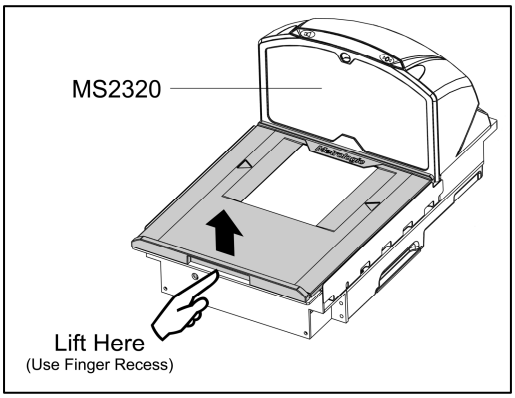


Figure 6

LIFT HANDLES
REST both thumbs against the vertical window frame for added stability when lifting the unit by the handles provided.

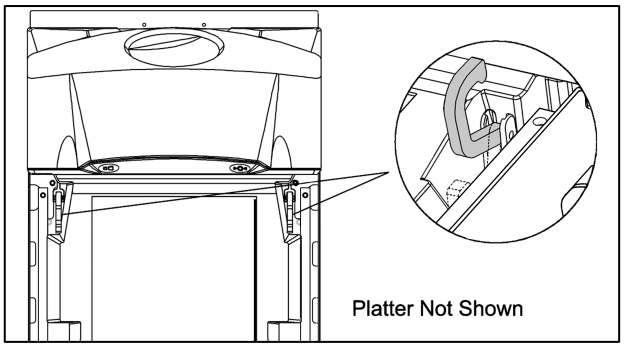


Figure 7

MS2320 SCANNER/SCALE DESIGN SPECIFICATIONS

	Design Specifications				
Operational					
Light Source:	VLD 650 nm				
Peak Laser Power:	<2.2 mW				
Maximum IR LED Output:	50µW per IEC 60825-1 measurement procedure				
Horizontal Depth of Field:	0 mm - 152 mm (0"- 6") for 0.33 mm (13 mil) Bar Code				
Vertical Depth of Field:	0 mm - 216 mm (0"- 8.5") for 0.33 mm (13 mil) Bar Code				
Scan Speed:	5840 Scan Lines per Second				
No. of Scan Lines:	66 (38 Horizontal / 28 Vertical)				
Motor Speed:	4800 / 6000 RPM (Horizontal / Vertical)				
Min Bar Width:	0.152 mm (6.0 mil)				
Decode Capability:	All Standard 1-D Bar Codes, RSS-14, RSS-Expanded, and RSS-14 Limited Bar Codes				
System Interfaces:	RS232, Aux RS232, RS485▲, USB, and OCIA				
Print Contrast:	35% Minimum Reflectance Difference				
No. Characters Read:	Up to 80 data characters. Maximum number will vary based on symbology and density.				
Beeper Operation:	7 Tones or No Beep; 3 Volume Settings				
Indicators (LED):	Blue	Laser ON, Ready to Scan			
	White	Good Read, Decoding			
Mechanical					
L x W x H:	508 mm (20") Length	290 mm (11.4") Width	181 mm (7.1") Tower Height		
Depth (Below Counter):	100 mm (3.9")				
Weight (with Platter):	11.34 kg (24.95 lbs.)				
Electrical					
Voltage Supply:	1.5A @ +5V / 1.5A @ +12V				
Power:	Operating, 14.25 Watts	Standby, 3.25 Watts			
Current:	Operating, 1A @ 5V / .75A @ 12V	Standby, 0.44 A @ 5V / 0.08A @ 12V			
DC Transformers:	Class II; 5.2VDC @ 1.5A; 12VDC @ 1.5A				
*For Regulatory Compliance Information, refer to pages **Error! Bookmark not defined.** - 70.*					
Scale Capacities					
Capacity:	kg unit	15 kg		lb. unit	30.0 lb.
Minimum Increment:	kg unit	0.005 kg		lb. unit	0.01 lb.
Maximum Static Weight:	kg unit	75 kg		lb. unit	150 lb.
Adjustments Required:	Calibration Only				
Environmental					
Operating Temperature:	0°C to 40°C (32°F to 104°F)				
IP Rating:	IP 55				
Light Levels:	4842 Lux (450 footcandles)				
Storage Temperature:	-40°C to 60°C (-40°F to 140°F)				
Humidity:	5% to 95% Relative Humidity, Non-Condensing				
Contaminants:	Sealed to resist airborne particulate contaminants.				
Ventilation:	None Required				

▲ *Applicable for IBM® Host applications.*

Specifications are subject to change without notice.

BASE MODEL CHARACTERISTICS

MS2320 Scanner/Avery Scale

Components

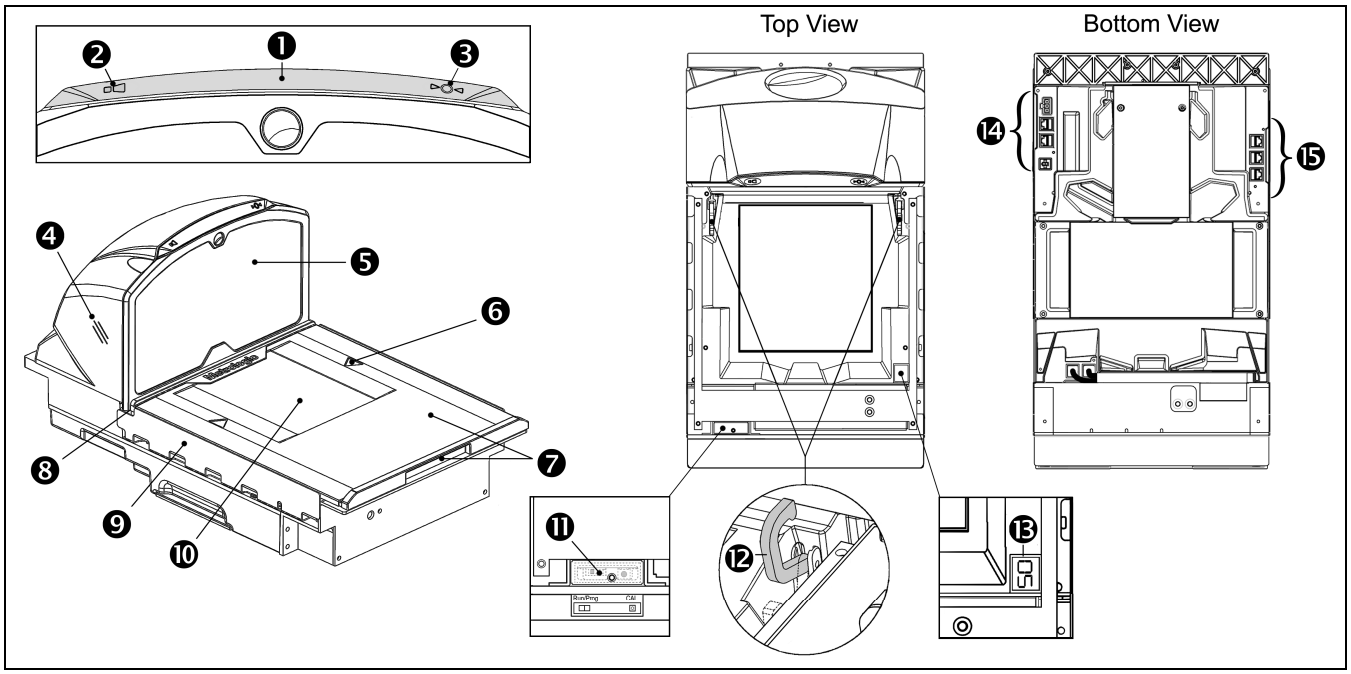


Figure 8. MS2320 Components

ITEM NO.	DESCRIPTION OF ITEM
1	Blue and White LED Indicators *(see page 30)*
2	Volume/Tone Multi-Function Button *(see page 35)*
3	Scale Zero Button
4	Speaker *(see page 30)*
5	High Impact Window Frame / Vertical Window (Laser Aperture) *(see page 3)*
6	Flow Direction Indicators
7	Stainless Steel Platter with Finger Recess *(see page 3)*
8	Debris Channel
9	Scale Side Guards
10	Diamonex or Sapphire Horizontal Window (Laser Aperture)
11	Sealed Calibration Switch/Button Cover On a fully installed unit, the calibration switch cover should be sealed with a lead wire or paper seal. The seal indicates if the appropriate Federal, State and Local Weights and Measures authorities have calibrated the scale. See the *Scale Operation: Calibration* section of this guide for further information.
12	Handles for Lifting Unit
13	Diagnostic Indicator Display *(see page 32 for Error Codes)*
14	Power, Scale and EAS Connectors *(see page 7)*
15	Interface and Aux Scanner Connectors *(see page 7)*
	Scanner/Scale label information can be found on page 8.

MS2320 Scanner/Avery Scale

Dimensions

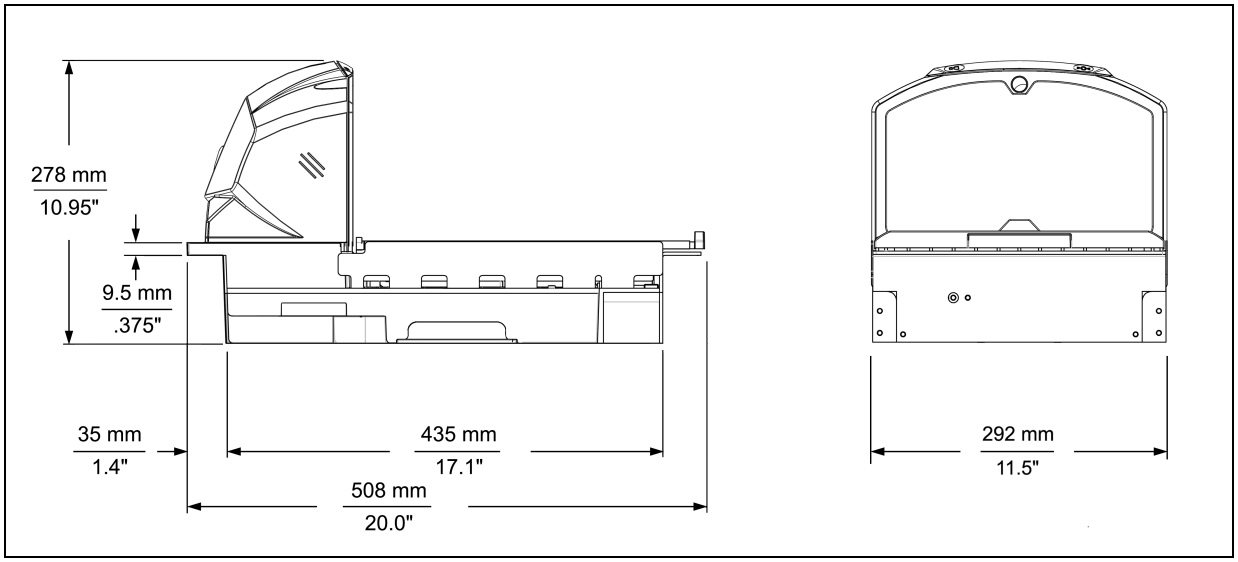


Figure 9. MS2320 Dimensions

Connector Panel

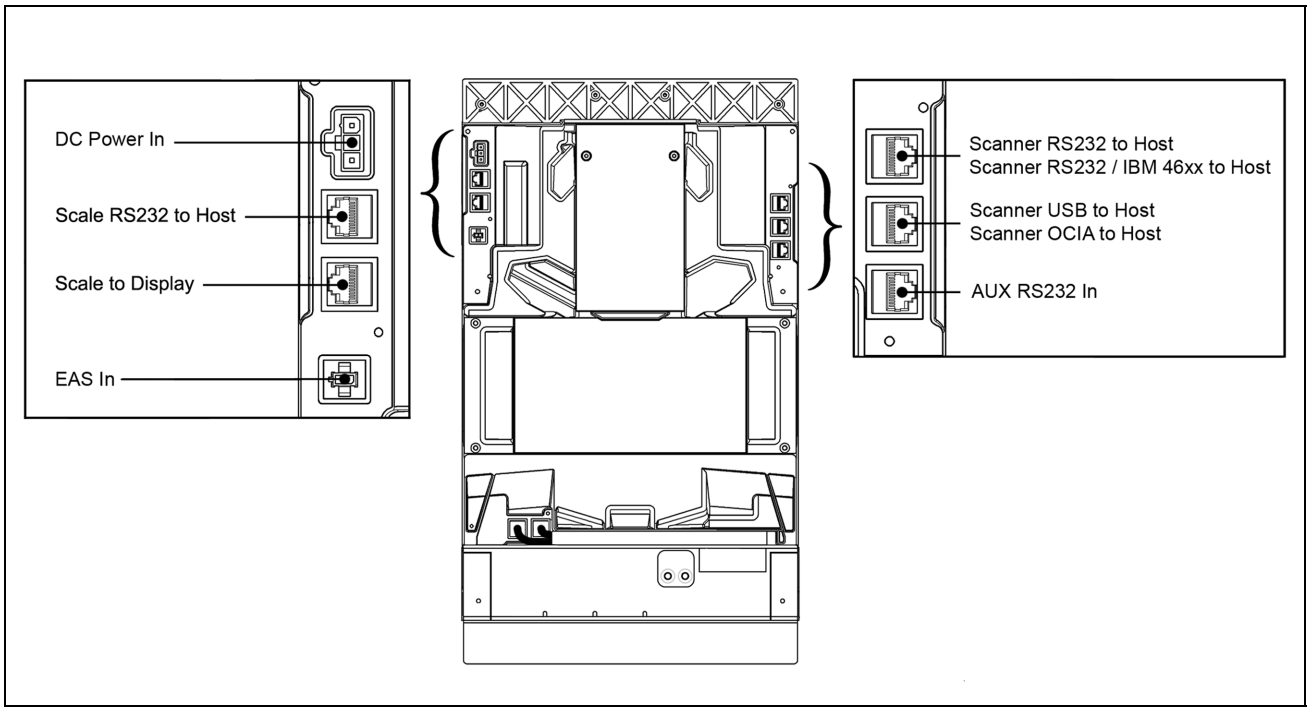


Figure 10. MS2320 Connector Panel

Specifications are subject to change without notice.

MS2320 Scanner/Avery Scale

Caution and Serial Number Labels

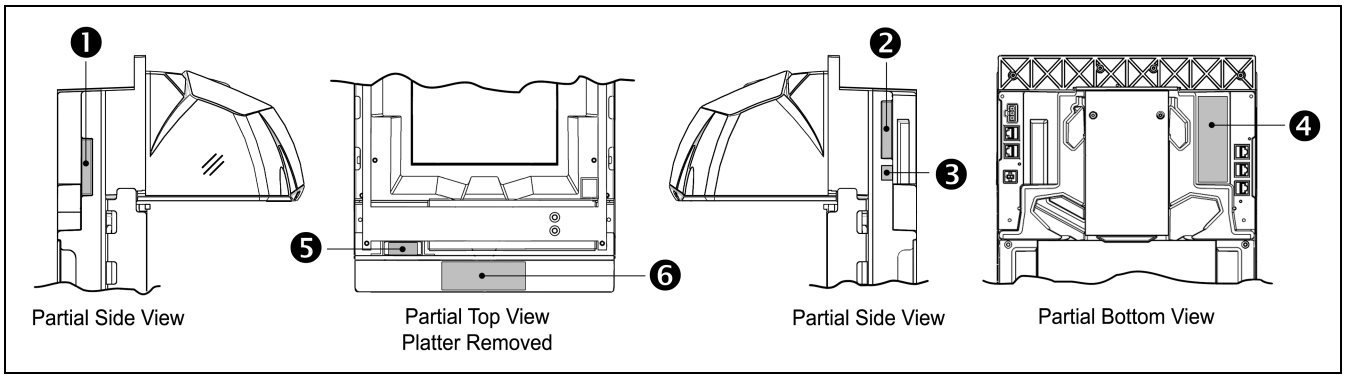
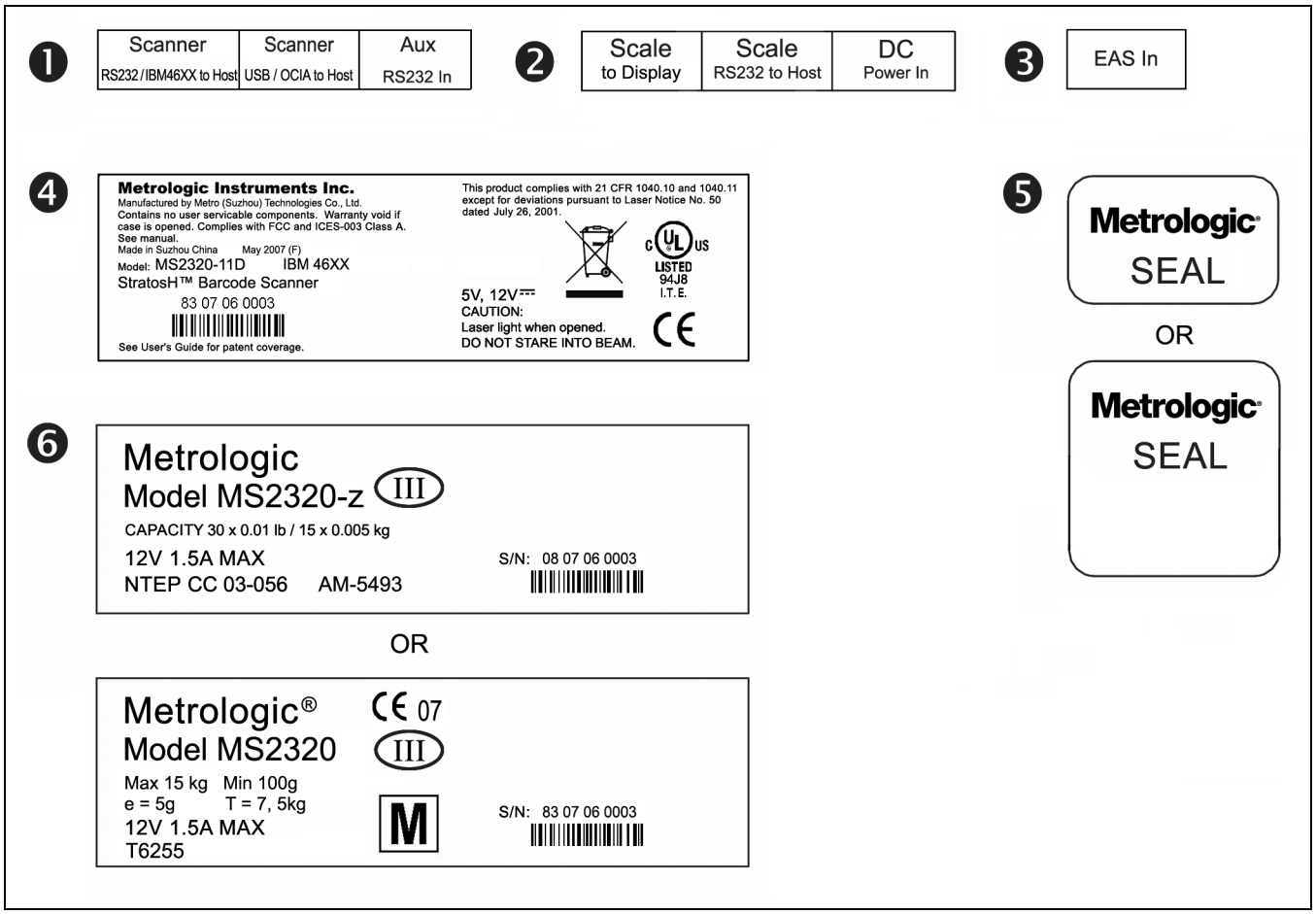


Figure 11. MS2320 Label Locations (Top) and Examples (Bottom)



Caution: To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950-1.

To maintain compliance with standard CSA C22.2 No. 60950-1/UL 60950-1 and norm EN/IEC 60950-1, the power source should meet applicable performance requirements for a limited power source.

QUICK INSTALLATION OUTLINE

The following is a quick preview of the steps required for first time installations. Each item is discussed in detail later in this section.

- Determine clearance, ventilation and service access requirements.
- Determine checkout counter layout taking into account package flow, cable routing and power requirements.
- Choose the mounting option which provides the best cable/power access and unit stability.
- Unpack the unit and remove the shipping hardware from the scale arms.
- Make the appropriate countertop cutouts and install all support brackets.
- Place the unit in the counter.
- Install the platter.
- Follow the steps under the correct interface to connect the cables and power supply.
- Configure the unit for the correct interface.
- Calibrate the scale.

SITE REQUIREMENTS

Before installing the Stratos*H* scanner, please consider the following items.

Vertical Clearance

A minimum clearance height of 7.00" from the checkout counter surface is needed for the vertical 'hood' on all of the scanner models.

Ventilation and Spacing

All Stratos*H* models have a die-cast housing to dissipate heat allowing the unit to operate without a ventilation fan. Metrologic recommends that the temperature surrounding the unit does not exceed 40°C (104°F). There should be adequate convection and minimal heat producing equipment in close proximity of the unit. A cooling fan with a filter is recommended if there will be a conveyor motor or other heat producing equipment close to the unit that will create a high temperature environment.

Adequate spacing between the unit and the checkout counter opening is required for proper operation of the scale. When the scanner/scale model is mounted properly, the scale platter should be able to move up and down freely without hitting the edges of the checkout counter cutout. Refer to *Installing the Unit in the Counter* for detailed cutout dimensions and mounting instructions.

Service Access

When routing and installing the cable(s) and power supply, make sure to leave access so that these components may be swapped easily without the need to remove the unit from the checkout counter.

When changing the Stratos***SWAP***™ optics engine modules, Metrologic recommends removing the unit completely from the checkout counter.

When calibrating or zeroing the scale, do not remove the unit from the checkout counter. Refer to the Scale Operation Section of this guide for detailed instructions on zeroing and calibration.

QUICK INSTALLATION OUTLINE

Power Installation

The Power Supply (AC/DC) should be connected to an AC Outlet that is free of electrical noise (clean). A qualified electrician can determine the amount of electrical noise on the AC line. See additional information on power installation and restrictions under the *Installation: Cable Installation (Interface Specific)* section of this manual.

Metrologic recommends using a switched AC outlet. The switch should be located on the operator's side of the checkout counter in close proximity to the Stratos*H* to facilitate calibration and service of the unit.

Checkout Counter Layout Considerations

When placing a scanner in a checkout counter, the following factors should be considered.

- Items should flow at a distance to the operator that maximizes comfort. The operator should not need to stretch or strain to reach for and scan packages.
- The Stratos*H* can scan a bar code on six sides of a package. The packages should flow into the scan area that provides the maximum reading performance. No lifting or orientation of the items is necessary. A properly placed item diverter can maximize the flow of packages.
- In what direction are the packages flowing? Most checkout counters are designed for left-handed takeaway. If the operator is facing the vertical window of the scanner, packages flow from the operator's right to left. The packages are in queue on the conveyor to the right and the bagging is to the left.

UNPACKING THE UNIT

1. Make sure the shipping box is top-side up before opening.

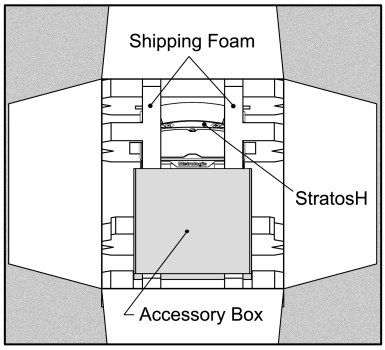


Figure 12

2. Remove the accessories box and check the box's content for the following items.

   - Product Manuals
   - Power Supply
   - Communication Cables

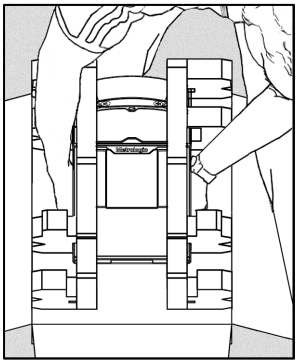


Figure 13

3. Lift the scanner out of the shipping box by gripping the **bottom** of the unit on both sides.

   Important! **Do not** lift the unit out of the box by gripping the sides of the platter.

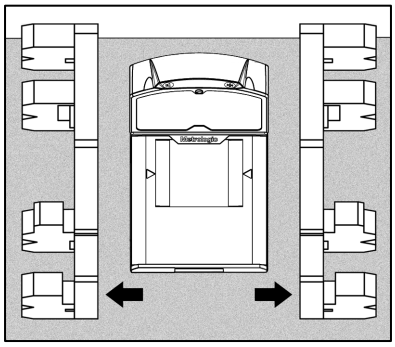


Figure 14

4. Carefully remove the shipping foam around the unit.

   Important! **Do not** turn the unit upside down or tilt the unit onto its side while removing the shipping foam. The platter is not attached to the unit and can fall off!

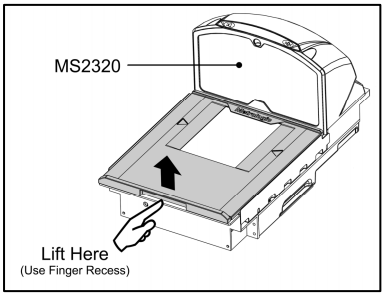


Figure 15

5. Lift the platter off the unit and store it in a safe location until the unit is installed in the checkout counter.

UNPACKING THE UNIT

MS2320 Package Warning

⚠ All hardware securing the scale arms during shipping must be removed or the scale will not function!

Do not discard instruction sheet and shipping hardware! These items must be reinstalled if the unit is going to be shipped. See Figure 16 for instructions on how to reinstall hardware before shipping.

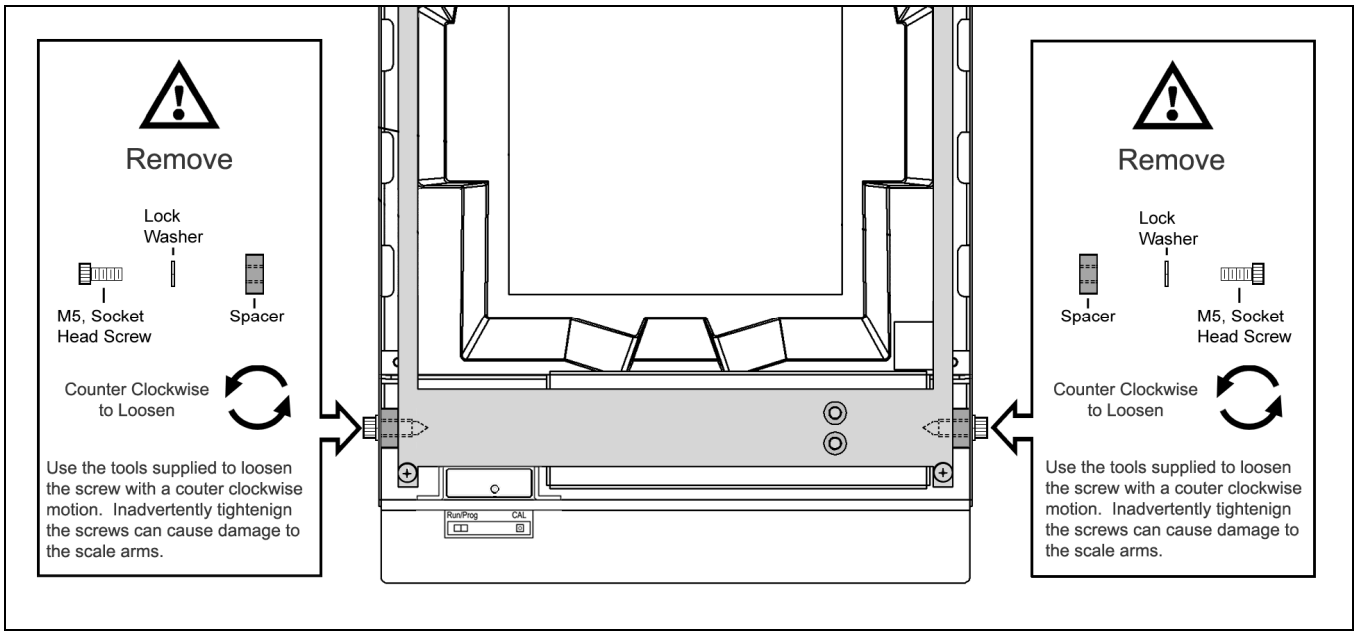

Remove
Lock Washer
M5, Socket Head Screw
Spacer
Counter Clockwise to Loosen
Use the tools supplied to loosen the screw with a couter clockwise motion. Inadvertently tightenign the screws can cause damage to the scale arms.
Run/Prog
CAL
Remove
Lock Washer
Spacer
M5, Socket Head Screw
Counter Clockwise to Loosen
Use the tools supplied to loosen the screw with a couter clockwise motion. Inadvertently tightenign the screws can cause damage to the scale arms.

Figure 16. Removal of Shipping Hardware

Do not discard these instructions and shipping hardware! If the unit is going to be reshipped at any time this hardware must be reinstalled for preventing damage to the scale arms during shipping.

Lifting the Unit by the Handles

There are two handles located under the removable platter near the base of the vertical window. These handles are provided to assist in installation when placing the unit in the checkout counter cutout.

To decrease the risk of dropping the unit during installation, rest both thumbs against the vertical window frame for added stability when lifting the unit by the handles. The unit will tilt forward when lifted by the handles if it is not stabilized making installation in the countertop cutout difficult.

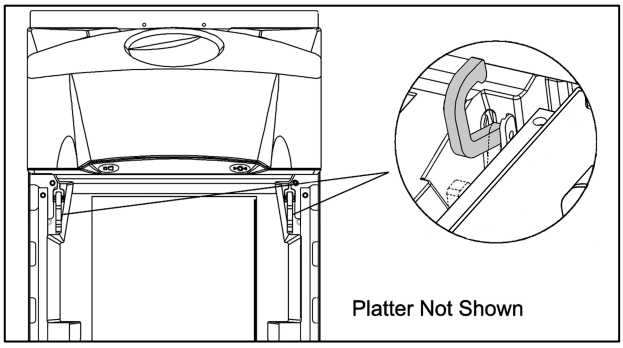


Figure 17. Handles for Lifing

INSTALLING THE UNIT IN THE COUNTER

MS2320 Mounting Diagram (Two Point Support)

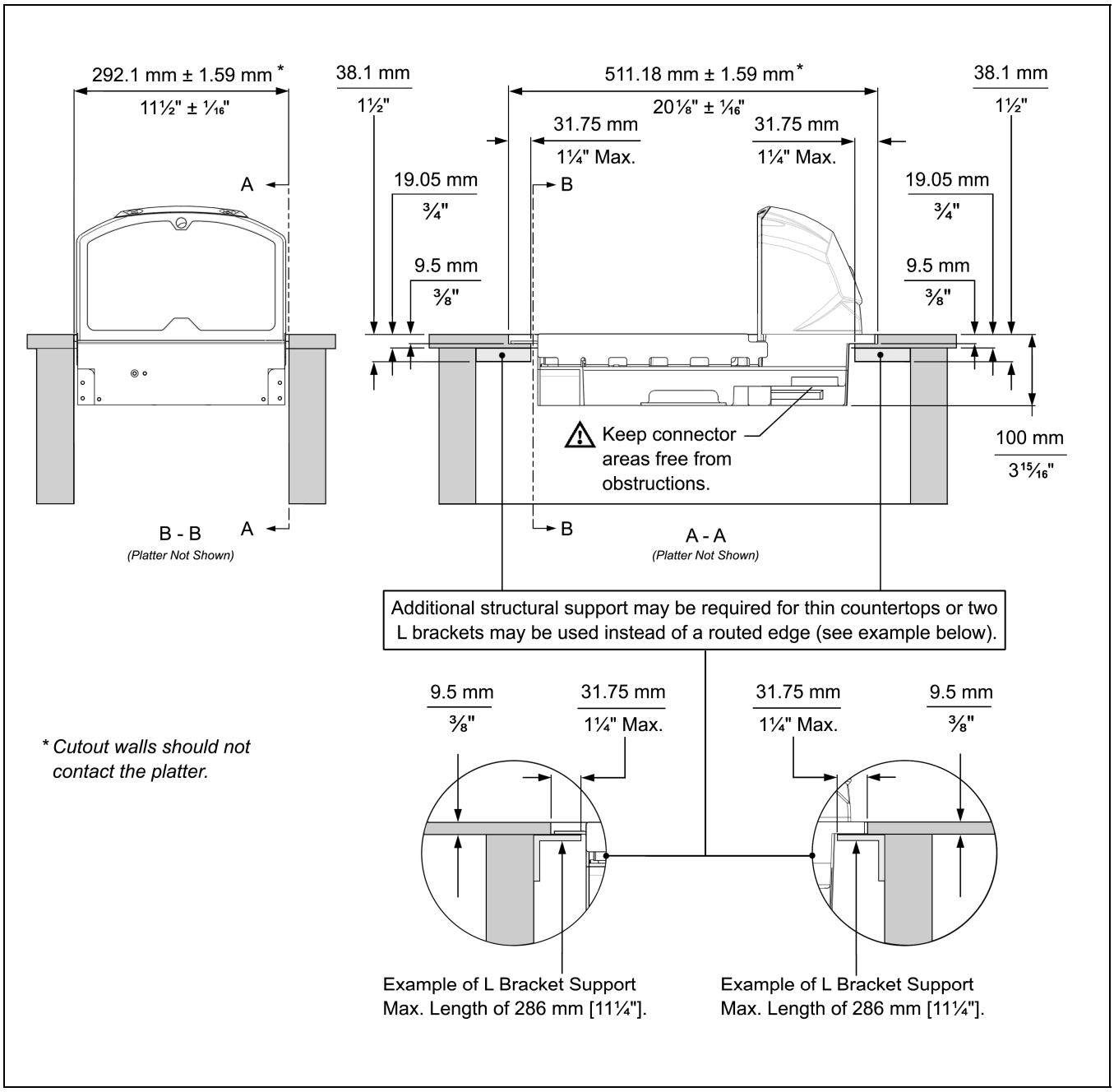


Figure 18. MS2320 Mounting Diagram, Two Point Support

Specifications are subject to change without notice.

INSTALLING THE UNIT IN THE COUNTER

MS2320 Mounting Diagram (Three Point Support)

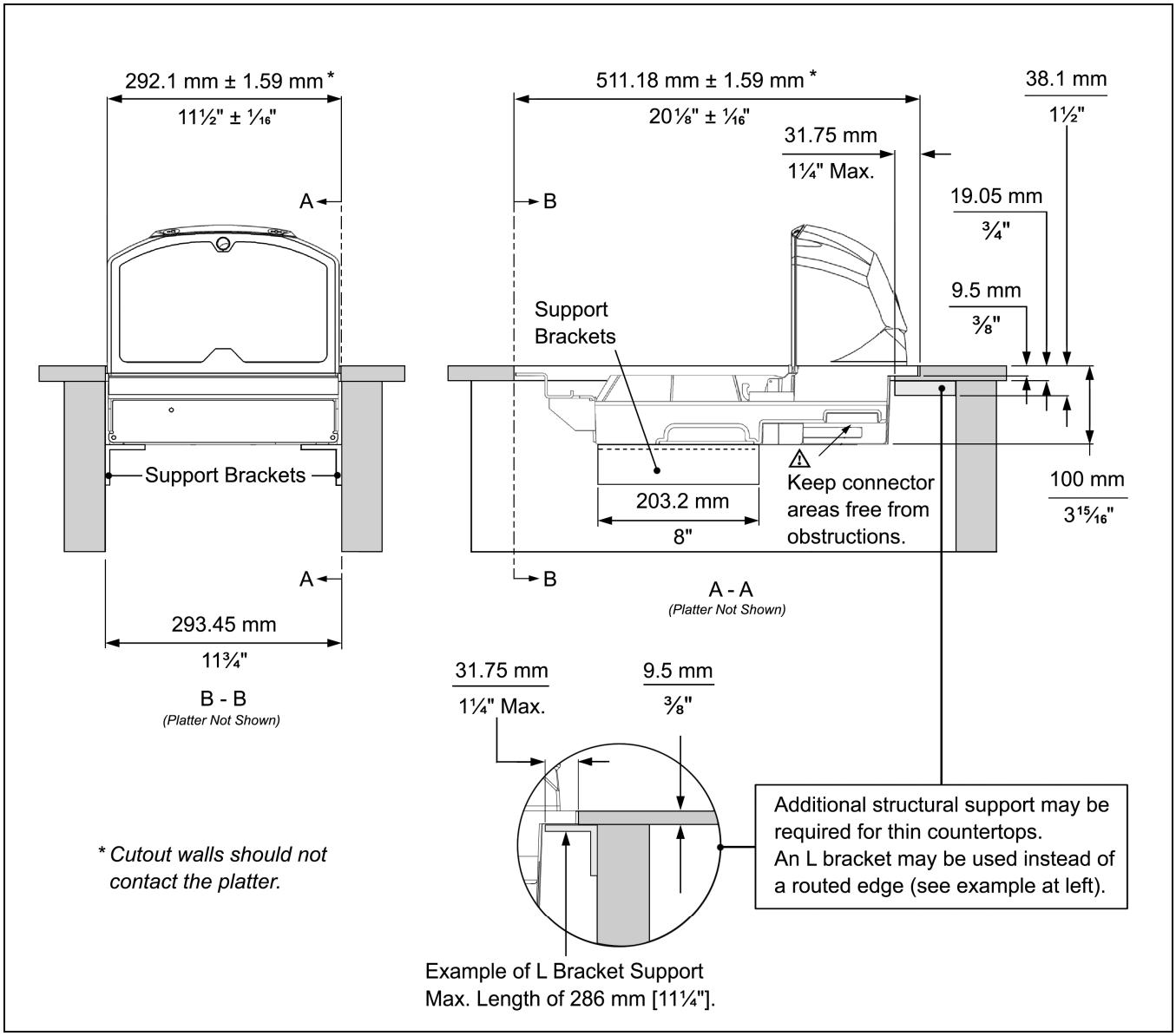


Figure 19. MS2320 Mounting Diagram, Three Point Support

Specifications are subject to change without notice.

CABLE INSTALLATION (INTERFACE SPECIFIC)

RS232

The following steps describe how to properly install the cables for an RS232 Stratos*H* application. The scanner/scale **must** then be configured to match the host's RS232 parameters. Cable installation alone **does not** guarantee that the Stratos*H* will communicate properly with the host system.

> Configuration bar codes are located in the MetroSelect Configuration Guide (MLPN 00-02407*x*) and the MS2*xxx* Stratos Series Configuration Addendum (MLPN 00-02034*x*).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the RS232 interface cable (MLPN 57-57000*x*-N-3) into the 10-pin socket labeled ***Scanner RS232 to Host***, on the bottom of the Stratos*H*. Refer to figure on page 16.

3. Connect the other end of the RS232 cable to the proper communication port on the host device.

> STOP Before continuing, verify that the RS232 interface cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.

Steps 4 and 5 are for ***dual cable*** interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a ***single cable*** interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (MLPN 57-57000*x*-N-3) into the 10-pin socket labeled, ***Scale RS232 to Host***, on the bottom of the Stratos*H*.

5. Connect the other end of the dual interface cable (MLPN 57-57000*x*-N-3) to the appropriate communication port on the host's scale device.

6. Plug the optional remote display cable (MLPN 46-00248*x* or 46-00249*x*) into the 10-pin socket labeled, ***Scale to Display***, on the bottom of the Stratos*H*.

7. Plug the external power supply (MLPN 46-46*xxx**) into the 3-pin Molex socket labeled, ***DC Power In***, on the bottom of the Stratos*H*.

   *xxx** Specifies international connection. See *Optional Accessories* in the *Introduction* section of this guide for a complete listing.

> Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

> Metrologic recommends using a switched AC outlet. The switch should be located on the operator's side of the checkout counter in close proximity to the Stratos*H* to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

CABLE INSTALLATION (INTERFACE SPECIFIC)

RS232

9. Turn on the host system.

10. Scan the ***Recall Defaults*** bar code.

> The *Recall Defaults* bar code is located in the MetroSelect Configuration Guide (MLPN 00-02407*x*), under *Need to Start Over*.

11. Configure the Stratos*H* to match the host system's RS232 parameters.

> Refer to the MetroSelect Configuration Guide (MLPN 00-02407*x*) under *Section G: RS232* for ***Enabling RS232 Mode*** (scan the *recall defaults* bar code first).

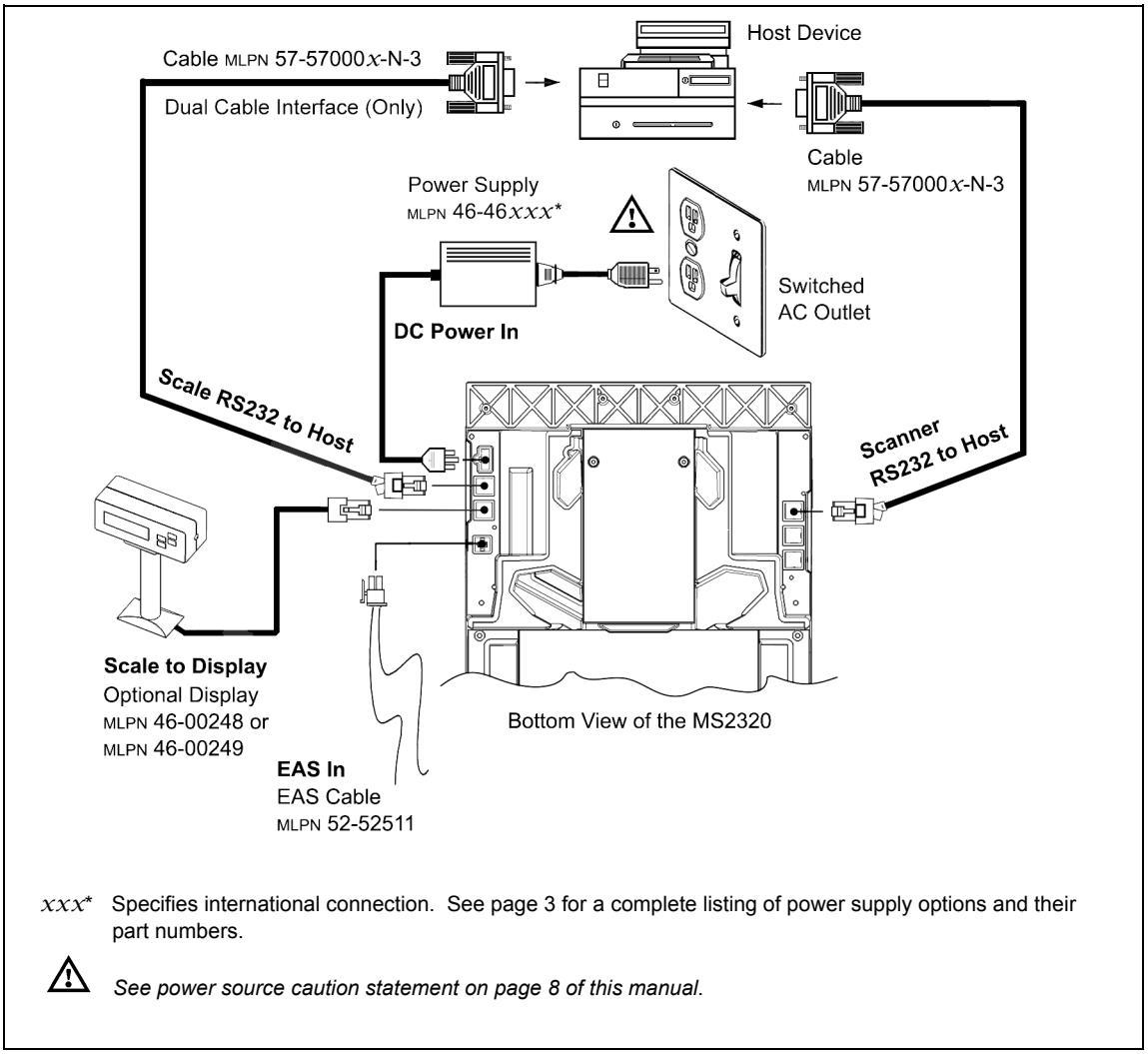


Figure 20. RS232 Interface Cable Installation Schematic

CABLE INSTALLATION (INTERFACE SPECIFIC)

FULL SPEED USB

The following steps describe how to properly install the cables for a Full Speed USB Stratos*H* application. The scanner/scale **must** then be configured to match the host's USB parameters. Cable installation alone **does not** guarantee that the Stratos*H* will communicate properly with the host system.

> Configuration bar codes are located in the MetroSelect Configuration Guide (MLPN 00-02407*x*) and the MS2*xxx* Stratos Series Configuration Addendum (MLPN 00-02034*x*).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the USB interface cable (MLPN 57-57200*x*-N-3 or 57-57006*x*-N-3) into the 10-pin socket labeled, ***Scanner USB to Host***, on the bottom of the Stratos*H*. Refer to Figure on page 19.

3. Connect the other end of the USB interface cable to the appropriate USB port on the host device.

> STOP Before continuing verify that the USB interface cable is connected to the appropriate socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.

> *Manufacturers Note:* Plugging the scanner into the USB port of the host does not guarantee that scanned information will appear at the host. A software driver and correct configuration setting are also required for proper communication to occur.

Steps 4 and 5 are for ***dual cable*** interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a ***single cable*** interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (MLPN 57-57000*x*-N-3) into the 10-pin socket labeled, ***Scale RS232 to Host***, on the bottom of the Stratos*H*.

5. Connect the other end of the dual interface cable (MLPN 57-57000*x*-N-3) to the appropriate communication port on the host's scale device.

6. Plug the *optional* remote display cable (MLPN 46-00248*x* or 46-00249*x*) into the 10-pin socket labeled, ***Scale to Display***, on the bottom of the Stratos*H*.

7. Plug the external power supply (MLPN 46-46*xxx**) into the 3-pin Molex socket labeled, ***DC Power In***, on the bottom of the Stratos*H*.

   *xxx** Specifies international connection. See *Optional Accessories* in the *Introduction* section of this guide for a complete listing.

> Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

> Metrologic recommends using a switched AC outlet. The switch should be located on the operator's side of the checkout counter in close proximity to the Stratos*H* to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

CABLE INSTALLATION (INTERFACE SPECIFIC)

FULL SPEED USB

9. Turn on the host system.

10. Configure the Stratos*H* to match the host system's USB parameters.

> **For Single Cable Applications:**
>
> The ***IBM OEM Full Speed USB English and Metric*** bar codes are located in the *MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x)* under Scanner Configuration Bar Codes: **Single Cable** Protocols for POS Compatibility, IBM OEM Full Speed USB.
>
> **For Dual Cable Applications:**
>
> The **IBM OEM Full Speed USB Communication Defaults** bar code is located in the *MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x)* under Scanner Configuration Bar Codes: **Dual Cable** Scanner Configuration Bar Codes, IBM OEM Full Speed USB Communication Defaults and IBM OEM Full Speed USB Protocols.

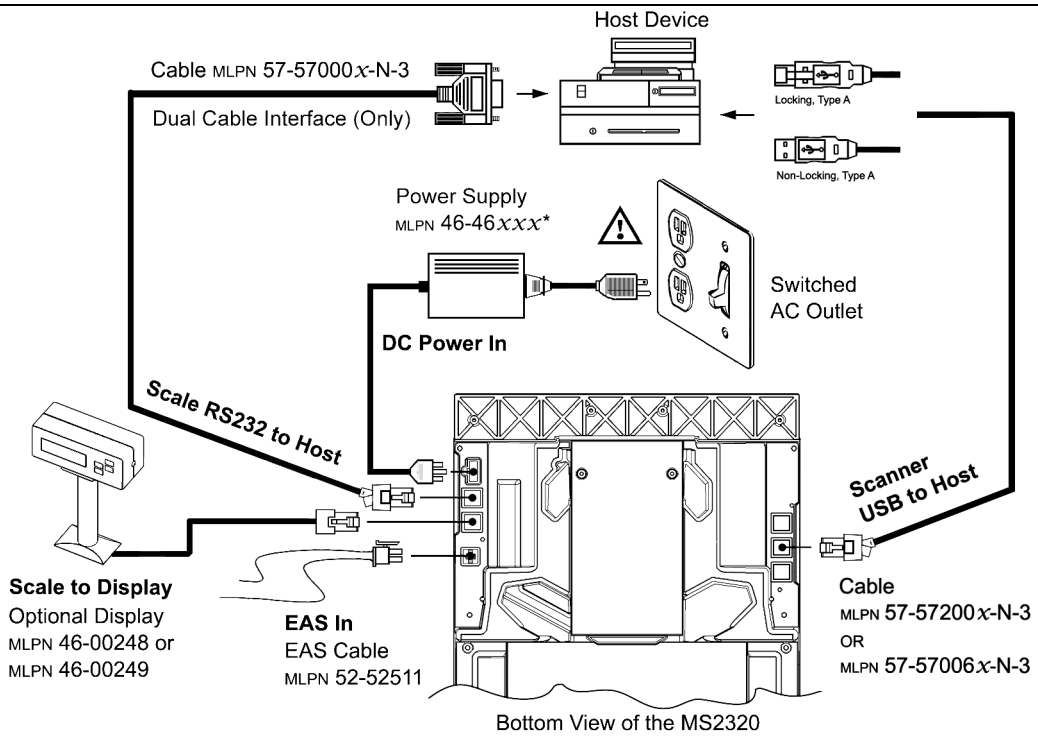
FOR USB SERIAL EMULATION MODE OR KEYBOARD EMULATION MODE ONLY

These features can only be used for a Dual Cable Applications.

11. Configure the Stratos*H* for **Bi-Directional USB Serial Emulation Mode** or **USB Keyboard Emulation Mode** by scanning the appropriate configuration bar codes in the USB section of the *MetroSelect Configuration Guide (MLPN 00-02407x)*.

> **These features can only be used for Dual Cable Applications.** The **IBM OEM Full Speed USB Communication Defaults** bar code listed in step 10 must be scanned before scanning one of these bar codes or this feature will not work properly.

CABLE INSTALLATION (INTERFACE SPECIFIC)



*xxx** Specifies international connection. See page 3 for a complete listing of power supply options and their part numbers.

See power source caution statement on page 8 of this manual.

Figure 21. USB Cable Installation Schematic

CABLE INSTALLATION (INTERFACE SPECIFIC)

RS485▲

The following steps describe how to properly install the cables for an RS485▲ Stratos*H* application. The scanner/scale **must** then be configured to match the host's RS485▲ parameters. Cable installation alone **does not** guarantee that the Stratos*H* will communicate properly with the host system.

> Configuration bar codes are located in the MetroSelect Configuration Guide (MLPN 00-02407*x*) and the MS2*xxx* Stratos Series Configuration Addendum (MLPN 00-02034*x*).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the RS485▲ interface cable (MLPN 57-57004*x*-N-3) into the 10-pin socket labeled ***Scanner RS232 / IBM 46xx to Host***, on the bottom of the Stratos*H*. Refer to Figure on page 21.

3. Connect the other end of the RS485▲ cable to communication port 9 on the host device.

> Before continuing verify that the RS485▲ cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.

> *Manufacturers Note:* Plugging the scanner into the serial port of the host device does not guarantee that scanned information will appear at the host device. A software driver and correct configuration settings are also required for proper communication to occur.

Steps 4 and 5 are for ***dual cable*** interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a ***single cable*** interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (MLPN 57-57000*x*-N-3) into the 10-pin socket labeled, ***Scale RS232 to Host***, on the bottom of the Stratos*H*.

5. Connect the other end of the dual interface cable (MLPN 57-57000*x*-N-3) to the appropriate communication port on the host's scale device.

6. Plug the *optional* remote display cable (MLPN 46-00248*x* or 46-00249*x*) into the 10-pin socket labeled, ***Scale to Display***, on the bottom of the Stratos*H*.

7. Plug the external power supply (MLPN 46-46*xxx**) into the 3-pin Molex socket labeled, ***DC Power In***, on the bottom of the Stratos*H*.

*xxx** Specifies international connection. See *Optional Accessories* in the *Introduction* section of this guide for a complete listing.

> Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

> Metrologic recommends using a switched AC outlet. The switch should be located on the operator's side of the checkout counter in close proximity to the Stratos*H* to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

▲ *Applicable for IBM® Host applications*.

CABLE INSTALLATION (INTERFACE SPECIFIC)

RS485▲

9. Turn on the host system.

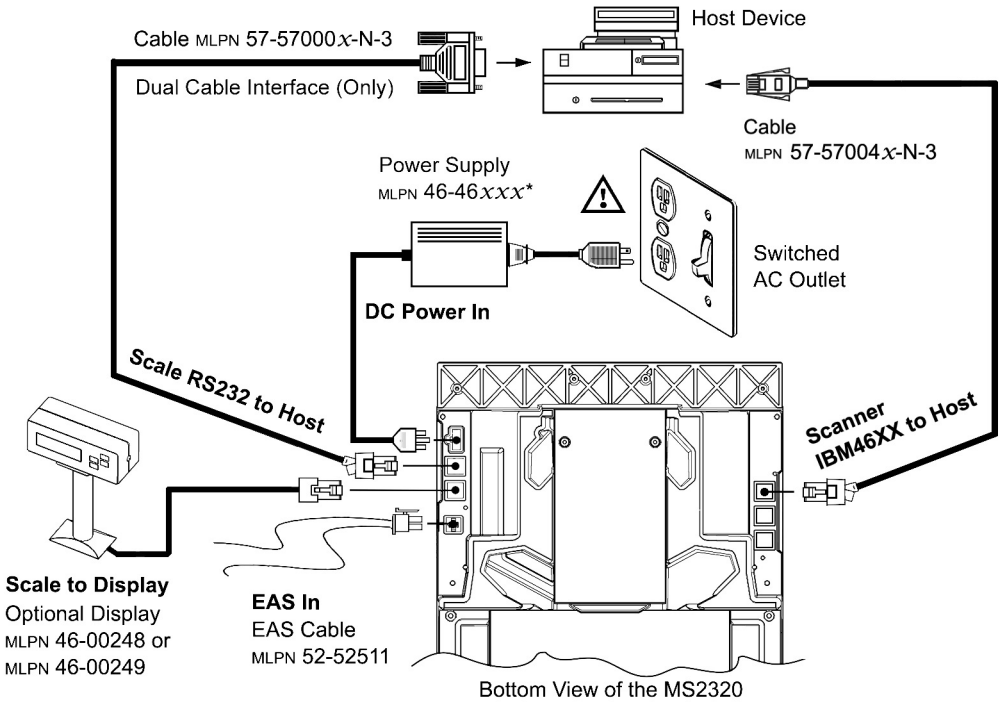
10. Configure the Stratos*H* to match the host system's RS485▲ parameters.

For Single Cable Applications:

The ***IBM 3rd Generation 46xx, English* and *Metric*** bar codes are located in the *MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x)* under Scanner Configuration Bar Codes: **Single Cable** Protocols for POS Compatibility, IBM 3rd Generation 46*xx*.

For Dual Cable Applications:

The **IBM 3rd Generation 46xx and IBM OEM Full Speed USB** bar code is located in the *MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x)* under Scanner Configuration Bar Codes: **Dual Cable** Scanner Configuration Bar Codes, IBM 3rd Generation 46*xx* and IBM OEM Full Speed USB.



*xxx** Specifies international connection. See page 3 for a complete listing of power supply options and their part numbers.

See power source caution statement on page 8 of this manual.

Figure 22. RS485▲ Cable Installation Schematic

▲ *Applicable for IBM® Host applications*.

CABLE INSTALLATION (INTERFACE SPECIFIC)

OCIA

The following steps describe how to properly install the cables for an OCIA Stratos*H* application. The scanner/scale **must** then be configured to match the host's OCIA parameters. Cable installation alone **does not** guarantee that the Stratos*H* will communicate properly with the host system.

> Configuration bar codes are located in the MetroSelect Configuration Guide (MLPN 00-02407*x*) and the MS2*xxx* Stratos Series Configuration Addendum (MLPN 00-02034*x*).

1. Turn off the host system.

2. Plug the 10-pin RJ45 end of the OCIA interface cable (MLPN 57-57015*x*-N-3) into the 10-pin socket labeled ***Scanner OCIA to Host*** on the bottom of the Stratos*H*. Refer to figure on page 23.

3. Connect the other end of the OCIA Interface cable (MLPN 57-57015*x*-N-3) to the appropriate communication port on the host device.

> STOP Before continuing verify that the OCIA cable pinouts match the host system's and is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.

> *Manufacturers Note:* Plugging the scanner into the serial port of the host device does not guarantee that scanned information will appear at the host device. A software driver and correct configuration settings are also required for proper communication to occur.

Steps 4 and 5 are for ***dual cable*** interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a ***single cable*** interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (MLPN 57-57000*x*-N-3) into the 10-pin socket labeled, ***Scale RS232 to Host***, on the bottom of the Stratos*H*.

5. Connect the other end of the dual interface cable (MLPN 57-57000*x*-N-3) to the appropriate communication port on the host's scale device.

6. Plug the *optional* remote display cable (MLPN 46-00248*x* or 46-00249*x*) into the 10-pin socket labeled, ***Scale to Display***, on the bottom of the Stratos*H*.

7. Plug the external power supply (MLPN 46-46*xxx**) into the 3-pin Molex socket labeled, ***DC Power In***, on the bottom of the Stratos*H*.

*xxx** Specifies international connection. See *Optional Accessories* in the *Introduction* section of this guide for a complete listing.

> Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

> Metrologic recommends using a switched AC outlet. The switch should be located on the operator's side of the checkout counter in close proximity to the Stratos*H* to facilitate calibration and service of the unit.

CABLE INSTALLATION (INTERFACE SPECIFIC)

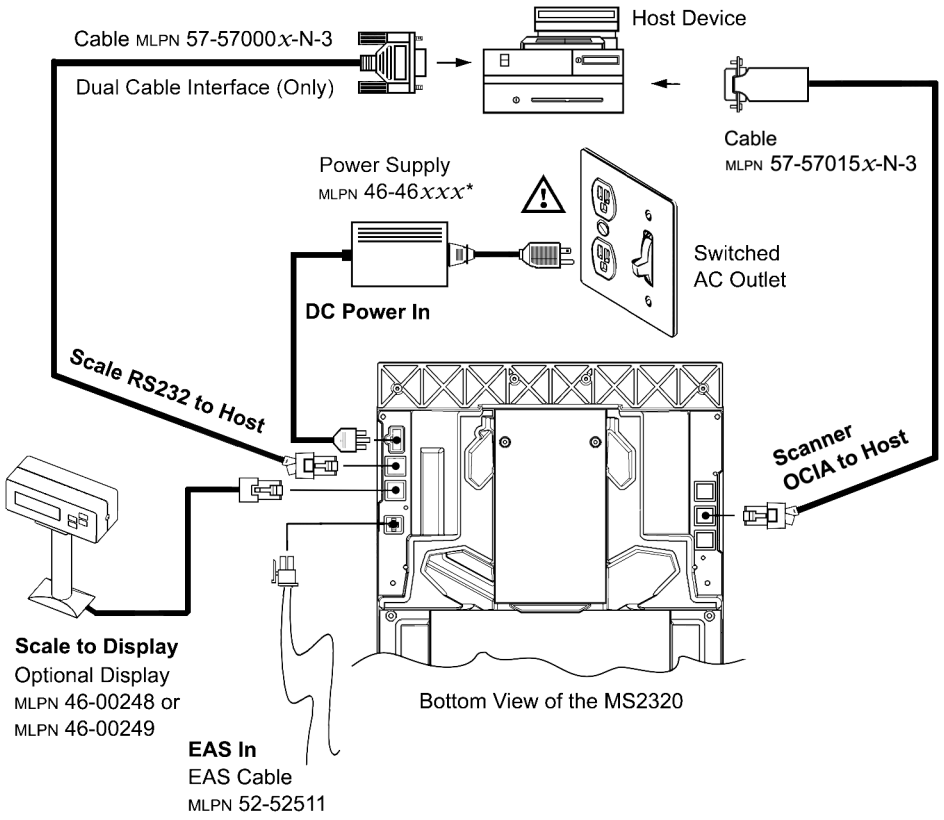
OCIA

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.

9. Turn on the host system.

10. Configure the Stratos*H* to match the host system's OCIA parameters.

> Refer to the MetroSelect Configuration Guide (MLPN 00-02407*x*) under ***Section I: OCIA* for Enabling and Setting OCIA Parameters**.



*xxx** Specifies international connection. See page 3 for a complete listing of power supply options and their part numbers.

See power source caution statement on page 8 of this manual.

Figure 23. OCIA Cable Installation Schematic

CABLE INSTALLATION (SECONDARY METROLOGIC SCANNER)

The following steps describe how to properly install the cables between a secondary *Metrologic* scanner and the Stratos*H*. The Stratos*H* and the secondary scanner **must** then be configured to communicate properly. Cable installation alone **does not** guarantee that the Stratos*H* will communicate properly with the host system and secondary scanner.

> Contact a Metrologic customer service representative **before** connecting another manufacturer's scanner to the Stratos*H* as a secondary scanner.

> Configuration bar codes are located in the MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x) under *Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Metrologic Scanner*.

1. Refer to pages 15 - 22 for the type of interface *(RS232, RS485▲, etc.)* required for your application. Follow the cable installation steps under the appropriate interface before continuing. Once the communication and power cables have been installed follow step 2 below for the secondary scanner installation.

2. Connect the **straight** end of the RS232 PowerLink AUX cable (MLPN 57-57099x-3) to the RS232 into the socket of the **secondary** scanner (*see figure on page 25*).

3. Connect the **angled** end of the RS232 AUX cable (MLPN 57-57099x-3) into the 10-pin socket labeled ***Aux RS232 In***, on the bottom of the Stratos*H*.

   Important: The StratosH series' aux port requires the signals; transmit, receive, RTS & CTS from the secondary scanner.

> The Stratos*H*'s auxiliary port will support 5VDC devices with a 150mA maximum current. If the auxiliary device exceeds this specification an external power supply will be required to power the auxiliary device.
>
> The following Metrologic scanners can receive power from Stratos*H*: the MS9520, MS9540, and the MS5145.

4. **This step is required for secondary devices that require >5VDC and/or 150mA current to operate.** Skip to step 5 if the secondary device requires ≤ 150mA 5VDC.

   Plug the power supply into the **secondary** scanner's PowerLink cable (MLPN 57-57099x-3) and connect AC power to the secondary scanner.

   > Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

5. Configure the Stratos*H* and the secondary scanner. The auxiliary input port's data format must match the main output format of the secondary scanner.

   > Refer to the MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x) under *Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Metrologic Scanners*.

▲ *Applicable for IBM® Host applications*.

CABLE INSTALLATION (SECONDARY METROLOGIC SCANNER)

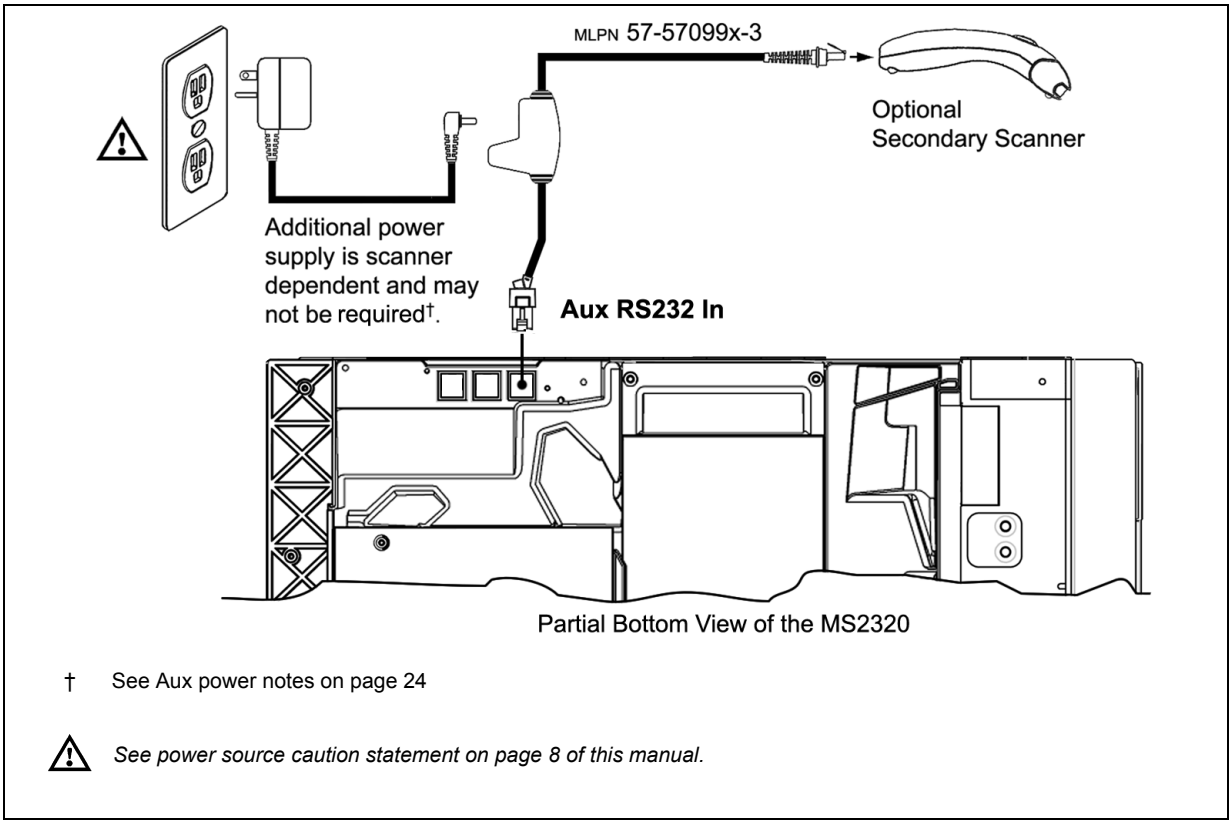

MLPN 57-57099x-3
Optional
Secondary Scanner
Additional power
supply is scanner
dependent and may
not be required†.
Aux RS232 In
Partial Bottom View of the MS2320
† See Aux power notes on page 24
See power source caution statement on page 8 of this manual.

Figure 24. Secondary Scanner Cable Installation Schematic

EAS DEACTIVATION

SW1 and SW2 are the switch banks inside the Checkpoint device that set the deactivation range. The following is a list of Checkpoint recommended switch bank settings.

Base Model	Checkpoint Recommended Switch Bank Settings
MS2320	SW1 & SW2 switches 1 and 6 set to ON

All Stratos*H* models have a connector labeled *EAS In* on the bottom of the unit. Metrologic has an optional EAS cable (MLPN 52-52511*x*) available for purchase for connection between the Checkpoint device and the Stratos*H*.

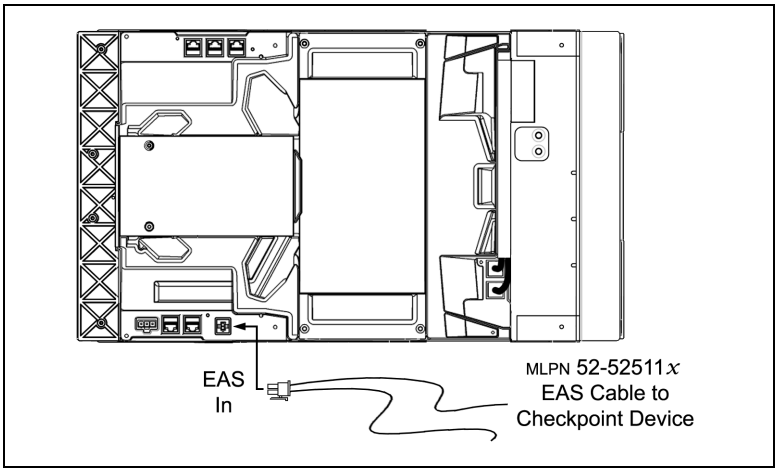


Figure 25. EAS Cable Connection (Bottom of StratosH)

The following figure shows the location of the EAS deactivation area for the Stratos*H*. It is important to pass the entire tag through this area to deactivate the security tag.

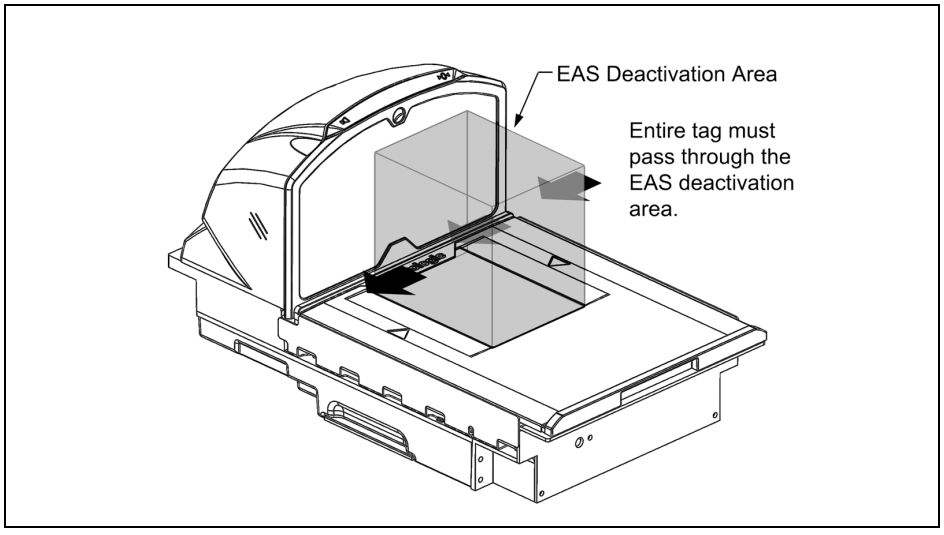


Figure 26. EAS Deactivation Area

SCAN ZONE

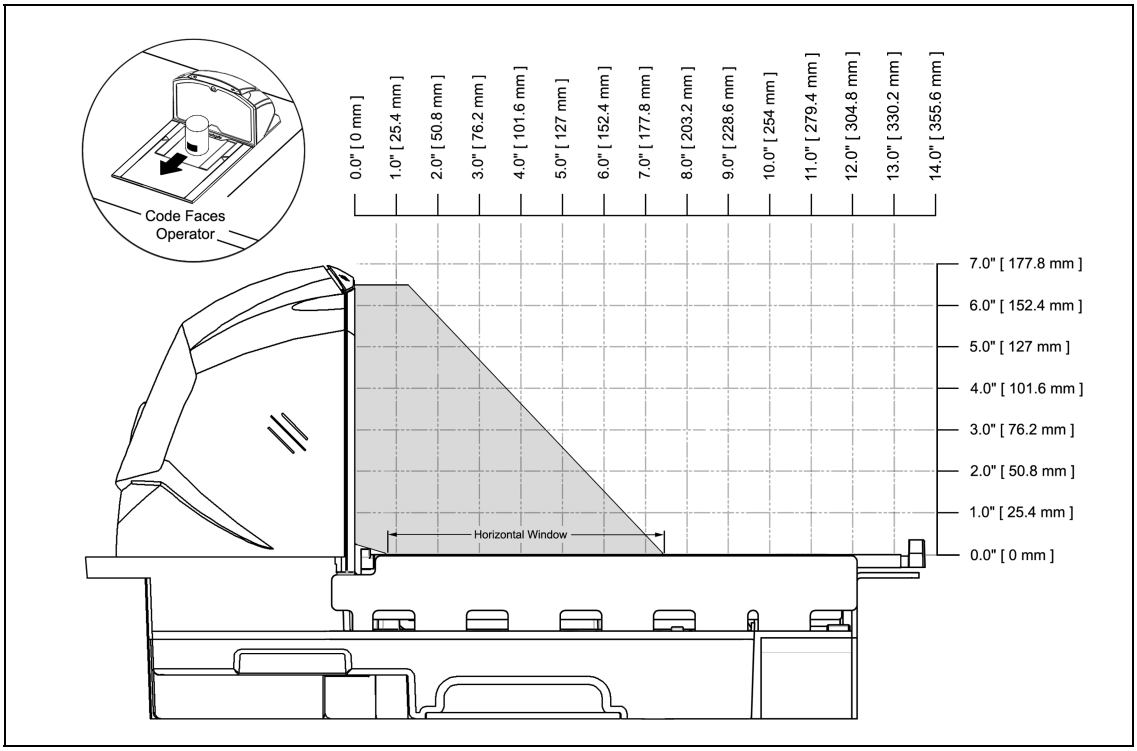


Figure 27. Checker-Side (13 mil)

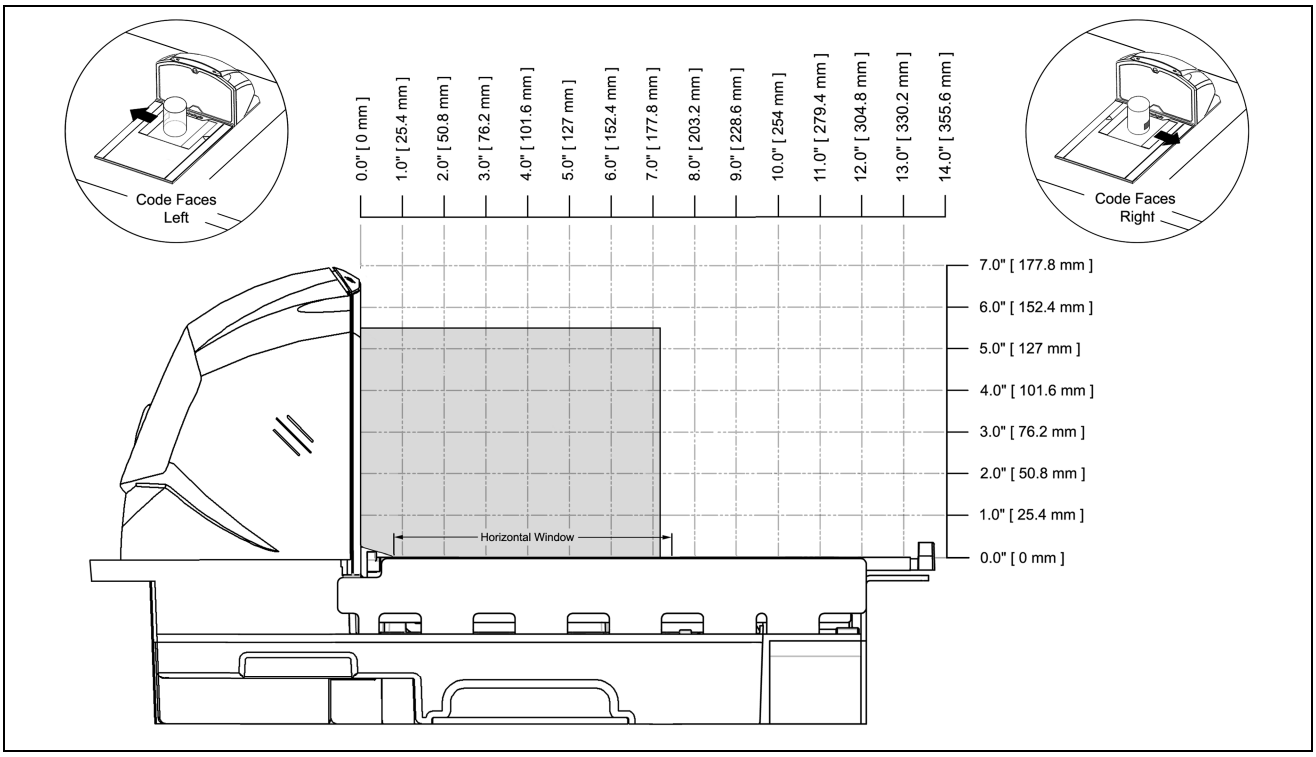


Figure 28. Horizontal Left/Right (13 mil)

Specifications are subject to change without notice.

SCAN ZONE

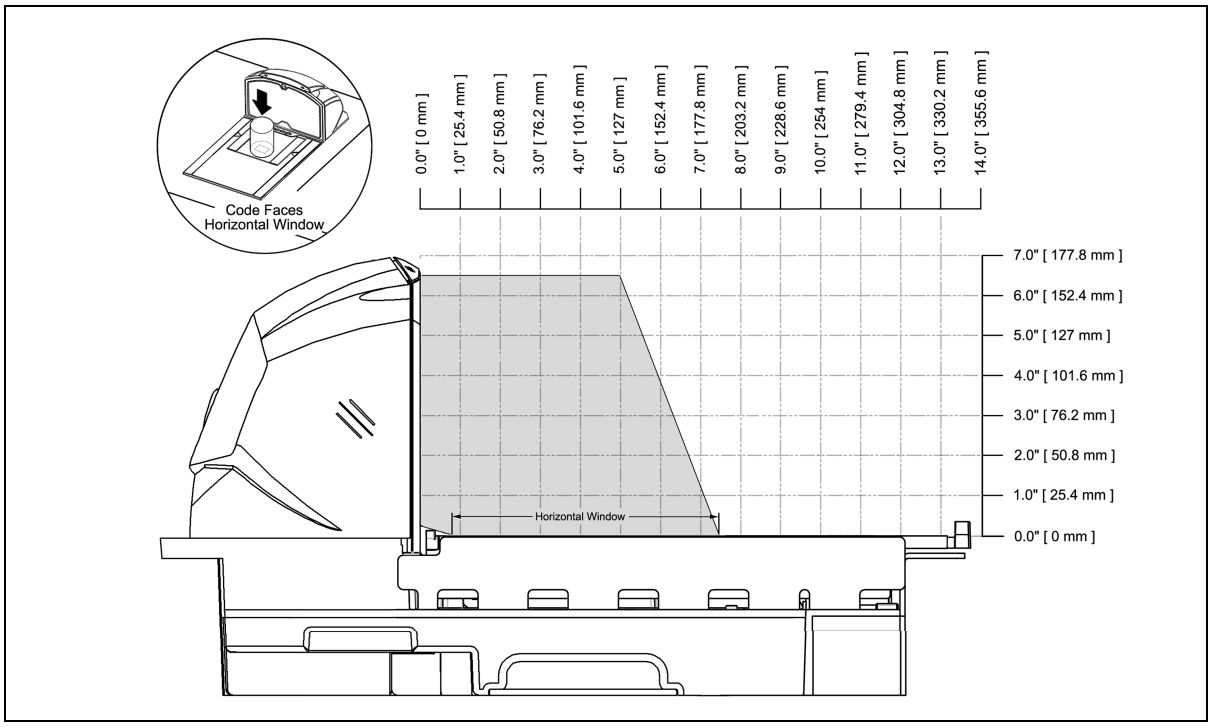


Figure 29. Horizontal Direct (13 mil)

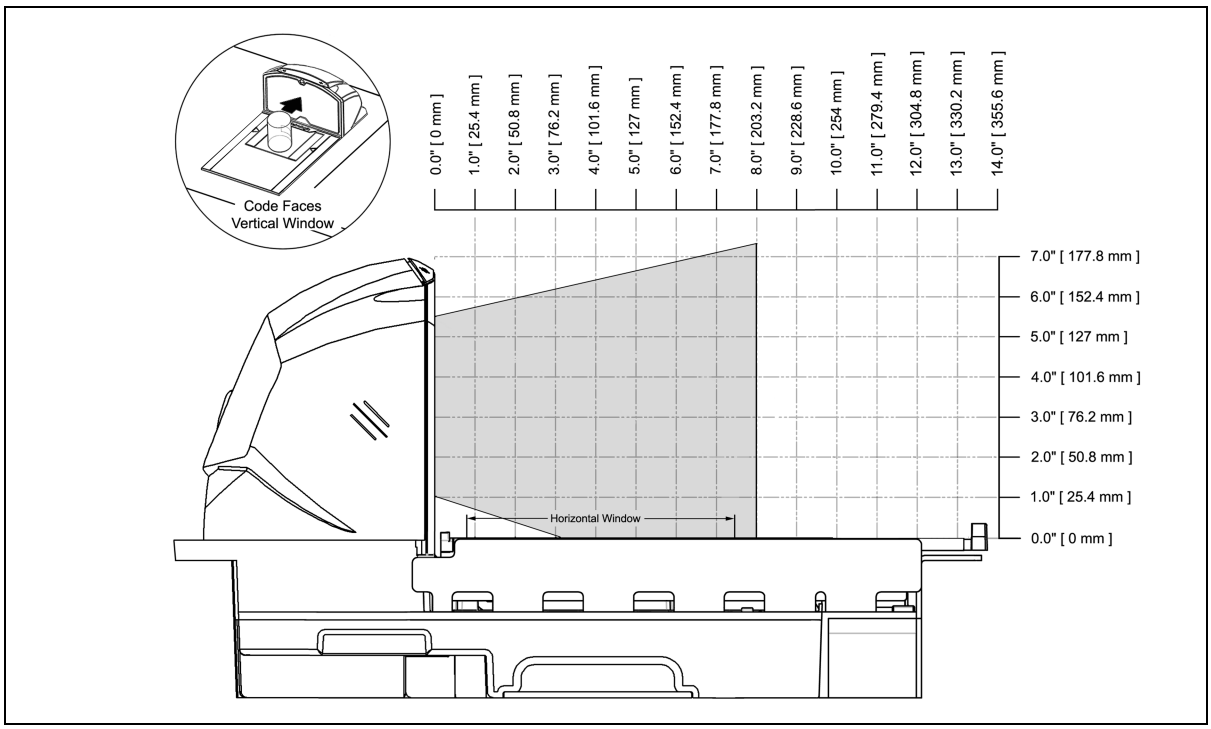


Figure 30. Vertical Direct (13 mil)

Specifications are subject to change without notice.

IR ACTIVATION AREA (IR LED OUTPUT)

The Stratos*H*'s default power save mode† is *Dual Action Power Save Mode #2 (see page 34)*. This power save mode† turns the laser OFF after a configured period of non-use then turns the motor OFF after thirty-minute intervals. Any movement detected by the IR in the activation area, shown below, will cause the scanner to exit the power save mode. The motor will restart automatically and the laser will turn back on preparing the scanner for bar code recognition, decoding and transmission.

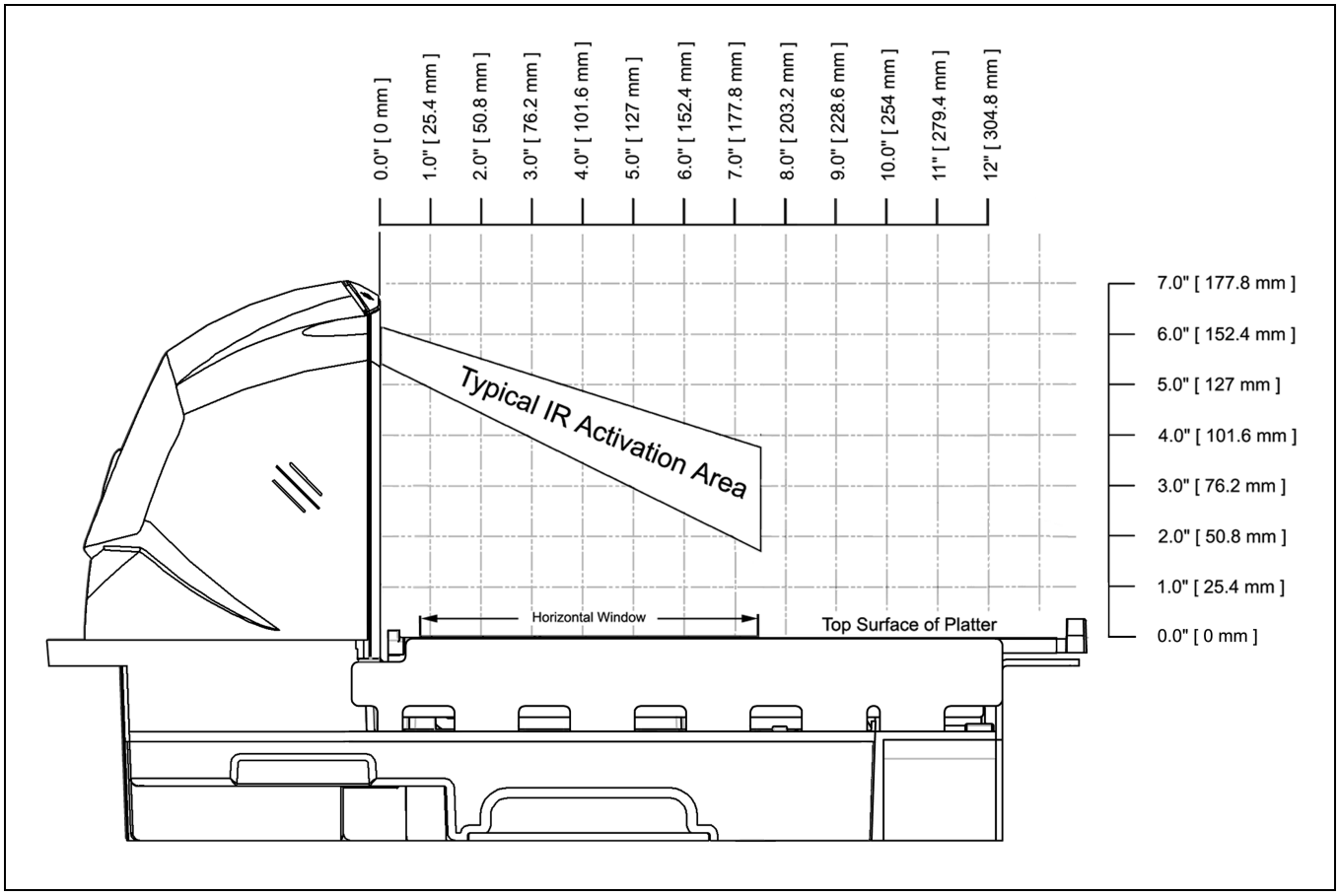


Figure 31. IR Activation Area Perpendicular to Package Flow (IR LED Output)

† *Refer to the MetroSelect Configuration Guide (00-02407) for additional information on configurable power save modes.*

Specifications are subject to change without notice.

INDICATOR DESCRIPTIONS

Audible

When in operation, the Stratos*H* provides audible feedback that indicates the status of the unit and the current scan. Eight settings are available for the tone of the beep (normal, six alternate tones and no tone) plus three volume settings. To change the tone or volume, refer to the *Changing the Beeper Tone & Volume* section of this manual.

One Beep

When the scanner *first* receives power the white LED will flash, the blue LED will turn on and the scanner will beep once (*the white LED will remain on for the duration of the beep*). The scanner is now ready to scan.

When the scanner *successfully* reads a bar code, the white LED will flash and the scanner beeps once (*if configured to do so*). If the scanner does not beep once and the white light does not flash, then the bar code has *not* been successfully read.

Razzberry Tone

This is a failure indicator. Refer to failure modes on page 31.

Three Beeps - during operation

When placing the scanner in configuration mode, the white LED will flash while the scanner simultaneously beeps three times. The white and blue LEDs will continue to flash until the unit exits configuration mode. Upon exiting configuration mode, the scanner will beep three times and the white LED will stop flashing.

When configured, three beeps can also indicate a communications timeout during normal scanning mode.

When using one-code-configuring, the scanner will beep three times (the current selected tone), followed by a short pause, a high tone and a low tone. This tells the user that the single configuration bar code has *successfully* configured the scanner.

Three Beeps - on power up

This is a failure indicator. Refer to failure modes on page 31.

Visual

White and blue LEDs are located at the top of the vertical output window. When the scanner is ON, the flashing or constant, illumination of the LEDs indicates the status of the Stratos*H* and the current scan.

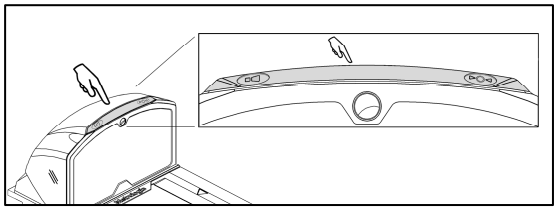


Figure 32. LEDs

No White or Blue LED

The LEDs will not be illuminated if the scanner is not receiving power from the host or transformer. They are also not illuminated when all lasers are turned off for any reason.

Steady Blue

When all lasers are active, the blue LED is illuminated. The blue LED will remain illuminated until all lasers are deactivated.

Steady Blue and Single White Flash

When the scanner successfully reads a bar code, the white LED will flash and the scanner will beep once. If the white LED does not flash or the scanner does not beep once, then the bar code has not been successfully read.

INDICATOR DESCRIPTIONS

Visual

Steady White and Blue

After a successful scan, the scanner transmits the data to the host device. Some communication modes require that the host inform the scanner when data is ready to be received. If the host is not ready to accept the information, the scanner's white LED will remain on until the data can be transmitted.

Flashing Blue then Flashing White

This indicates the scanner is in configuration mode. A razzberry tone indicates that an invalid bar code has been scanned in this mode.

Or

If the unit is in sleep mode, each LED will flash once every 15 seconds.

Steady White, Blue Off

This indicates the scanner may be waiting for communication from the host.

Flashing Blue

This indicates there is an error active on the diagnostic indicator display (see Error Codes on page 32). The scanner may continue to operate depending on the type of error.

Failure Modes

Flashing Blue and One Razzberry Tone

This indicates that the scanner has experienced a laser subsystem failure. The scanner will try up to three times to correct the failure condition. If the laser subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the operational components.

Flashing Blue and White and Two Razzberry Tones

This indicates that the scanner has experienced a motor subsystem failure. The scanner will try up to three times to correct the failure condition. If the motor subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the still operational components.

Continuous Razzberry Tone with Both LEDs Off

If, upon power up, the scanner emits a continuous razzberry tone, then the scanner has an electronic failure. Return the unit for repair at an authorized service center.

Three Beeps – On Power Up

If the scanner beeps three times on power up then, the nonvolatile memory that holds the scanner configuration has failed. Return the unit for repair at an authorized service center.

INDICATOR DESCRIPTIONS

Diagnostic Indicator Display

There is a two-digit error code display located under the platter near the end of the scanner farthest from the vertical window (see figure below).

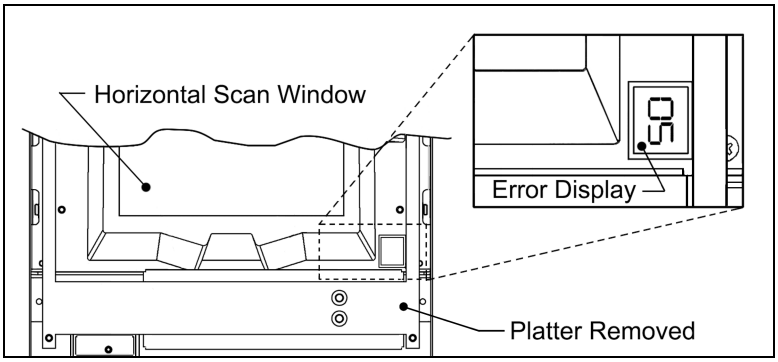


Figure 33. Error Code Display

The following is a list of possible error codes and their meanings. Some errors will require immediate scanner maintenance.

ERROR CODE	DESCRIPTION
01	Reserved
02	RAM ERROR – The scanner's Random Access Memory (RAM) is tested as faulty. Return the unit for repair at an authorized service center.
03	PROGRAM ERROR – The scanner's software program is failing. Return the unit for repair.
04	INTERFACE ERROR – After power up and any application exit (e.g. MetroSet, etc.), the scanner checks the interface hardware with that chosen in configuration. If they do not agree, an interface error exists. Correct this problem by getting the proper hardware interface OR programming Stratos*H* configuration for the proper interface hardware attached.
05	CONFIGURATION ERROR – The non-volatile configuration memory did not agree with the data last saved. Default configuration data is then used and the scanner continues operating. This error is also accompanied by three beeps. This error will remain during operation as a reminder that this power cycle is scanning against a default-generated configuration.
06	COMMUNICATION ERROR – The RS232 data line is being held active. This causes the scanner to read a "break" signal constantly and continuous attempts are made to enter MetroSet configuration mode. A short on the RX Data line can cause this condition. It can also be the result of a laptop in power save mode. The scanner will abort attempts to enter configuration mode after a short timeout. The scanner can automatically recover from this condition once the short in the RX Data line is corrected.
09	COPROCESSOR COMMUNICATION ERROR – The main microprocessor is not communicating with the interface coprocessor. The interface coprocessor may be in a fault condition with the host or just not able to respond. This error may appear when the scanner is configured for USB or RS485▲ interface applications or during an attempt to update the interface software through the flash utility. The unit should be repaired at an authorized service center.

▲ *Applicable for IBM® Host applications.*

INDICATOR DESCRIPTIONS

Diagnostic Indicator Display

ERROR CODE	DESCRIPTION
11	SWITCH ERROR – The switch used for volume selection or sleep mode is detected in error (always closed). The condition is self-correcting if possible. If the error persists, return the unit for repair at an authorized service center. The scanning operation can continue with this error active.
13	SCALE ERROR – Single Cable Scanner/Scales Only. The scanner does not communicate with the scale. Make sure there is nothing plugged into the *Scale RS232 to Host* port. If there is a cable connected, disconnect the cable it may be causing the communication error. If there is still no communication between the scanner and scale return the unit to an authorized service center for repair.
14	SCALE RETURN TO ZERO ERROR – The scale did not return to zero between scale weight requests if the zero checking function in enabled. The scale will need to be re-zeroed.
21	LASER #1 (VERTICAL) ERROR – The laser in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
22	LASER #2 (RIGHT HORIZONTAL) ERROR – The right laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the left horizontal laser (#3) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
23	LASER #3 (LEFT HORIZONTAL) ERROR – The left laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the right horizontal laser (#2) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
31	MOTOR #1 (VERTICAL) ERROR – The motor in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
32	MOTOR #2 (HORIZONTAL) ERROR – The motor in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators..

POWER SAVE MODES

The Stratos*H* has five configurable power save modes. Refer to the *MetroSelect Configuration Guide (MLPN 00-02407x)* for additional information on Power Save Modes.

1. **Blink Power Save Mode:**

   Blinks the laser OFF & ON after a configured period of non-use.

   When the scanner recognizes a bar code it will exit the Blink mode.

2. **Laser Off Power Save Mode:**

   Turns the laser OFF after a configured period of non-use. The motor continues to spin allowing for a faster "wake" up time.

   Any movement detected by the IR will "wake" the scanner from the *Laser Off* power save mode (see *Figure 31* on page 29).

3. **Laser & Motor Off Power Save Mode:**

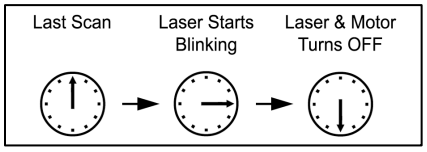
   Turns the laser and motor OFF after a configured period of non-use.

   Any movement detected by the IR will "wake" the scanner from the power save mode (see *Figure 31* on page 29). This mode's "wake" time is slightly longer due to the motor's need to restart.

4. **Dual Action Power Save Mode #1:**

   "Blinks" the laser OFF & ON after a configured period of non-use turns the laser and motor OFF at thirty-minute intervals.

   Example:
   If the power save timeout is set to 15 minutes.

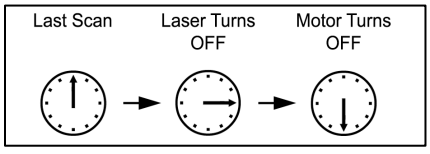


   Any movement detected by the IR will "wake" the scanner from the power save mode (see *Figure 31* on page 29).

5. **Dual Action Power Save Mode #2 (Default):**

   Turns the laser OFF after a configured period of non-use then turns the motor OFF after thirty-minute intervals.

   Example:
   If the power save timeout is set to 15 minutes.



   Any movement detected by the IR will "wake" the scanner from the power save mode (see *Figure 31* on page 29).

BEEPER OPTIONS AND BUTTON FUNCTIONS

Changing the Beeper Tone

Beeper tones may be configured incrementally using the following bar code. The new tone will be heard followed by a short pause. Two more new tones will be heard signifying the new setting has been stored in memory. The silent (no beep) tone is also selectable.

Next Beep Tone

³ 9 9 9 9 7 5

Changing the Beeper Volume

Volume levels may be configured using the volume button or incrementally using the following bar code. The new volume will be heard followed by a short pause. Two more tones will be heard signifying the new setting has been saved in memory. The silent (no volume) tone is also selectable.

Next Volume

³ 9 9 9 9 7 4

The Multi-Function Button

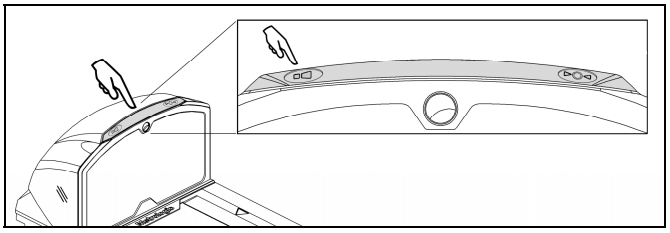


Figure 34. The Multi-Function Volume Button

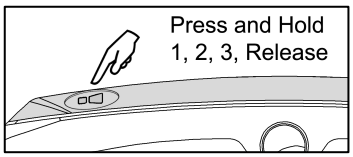


Figure 35. Changing the Beeper Volume

Changing the Beeper Volume

A short (<3 second) depression and the beeper volume will change.
The new volume will be heard. The silent (no beep) volume is also selectable.

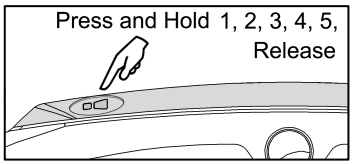


Figure 36. Laser & Motor Off Power Save Move

Placing the Unit in Laser & Motor Off Power Save Mode

Long (>3 seconds) depression The *Laser & Motor Off Power Save Mode* is the only power save mode that can be activated with the multi-function button*.

* *This feature is configuration dependent. Refer to the MetroSelect Configuration Guide (MLPN 00-02407x) under Scanner Operation: Power Save Modes to enable this feature.*

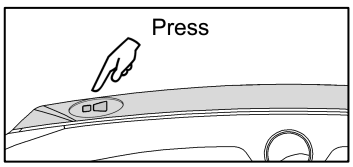


Figure 37. Normal Operation

Waking the Unit from All Power Save Modes

The next button depression will awaken the scanner for normal operation.

SCANNER OPERATION

STARTUP

When the scanner *first* receives power the white LED will flash, the blue LED will turn on and the scanner will beep once (*the white LED will remain on for the duration of the beep*). The scanner is now ready to scan.

POWER-UP TEST MODE

When a Stratos*H* scanner is first powered up, it cycles through a number of self-tests before starting normal operation. If there are any initial failures during this sequence of tests the scanner will beep or razz to indicate the error and an error code will appear in the diagnostic indicator display.

The following are examples of the types of tests performed at power-up.

1. Memory tests
2. Hardware setup tests
3. Motor tests
4. Laser tests
5. Configuration tests
6. Interface tests
7. Scale tests

These tests are also performed on a periodic basis with the operator alerted to any failures.

CONFIGURATION MODE

All Stratos*H* series scanners have been configured at the factory with a set of default communication protocols. Since many host systems have unique formats and protocol requirements, Metrologic provides a wide range of configurable features that may be selected with the use of the MetroSelect® Configuration Guide (MLPN 00-02407x), the MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x) and MetroSet.

For a complete list of the factory default settings, refer to the *Default Settings* section of this guide.

SCALE ZEROING

After the unit has been officially calibrated (see page 38) the scale can be re-zeroed by pressing the scale zeroing button on either the unit or on the remote display stand. Refer to the figures below for button locations.

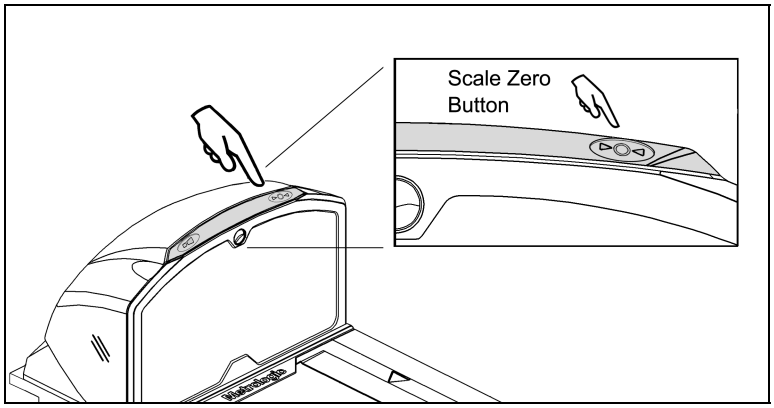


Figure 38. Scale Zero Button

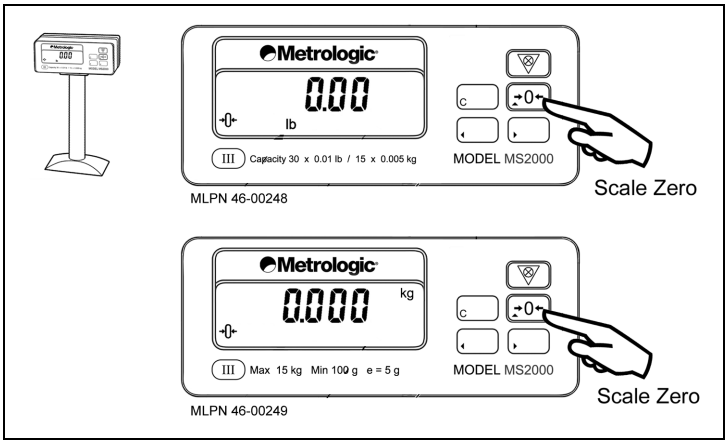


Figure 39. Optional Remote Display Keypad

CALIBRATION

The scanner/scale must be calibrated if:

- it is a first time installation
- the scale cannot be re-zeroed
- the calibration verification tests indicate errors
- there is a change in the units of measure [i.e. from pounds (lbs.) to kilograms (kg)]
- if the scale load cell has been replaced
- the calibration seal is missing or torn

> The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.
>
> It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

Tools Required

- Field Standard 30.0 pound Weight Set **or** 15.0 kilogram Weight Set
- Wire or Paper Seal

  > Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.

- Phillips #1 Screw Driver

Scale Calibration Methods

- ***Scale Calibration with Remote Display*** uses the scale display to sequence through the calibration steps and store critical calibration points.
- ***Bar Code Scale Calibration without Remote Display**** uses the scanner / scale *only* and assumes there is no remote scale display. A bar code is used to initiate the calibration sequence and the speaker volume switch is used to store critical range values.

* This calibration procedure will work with the remote display connected to the Stratos*H* but no data will appear on the remote display.

CALIBRATION

Priming the Scale for Calibration

Prime the scale before starting either method of calibration.

> Calibrate the scanner/scale **after** the unit is installed in the checkout countertop.

> It is important to use the correct certified (lb. *or* kg.) field weight set when calibrating the scale.

1. Check the platter to ensure that nothing is interfering with its freedom to move. Assure that no debris is present from daily use of the scanner/scale if it has been in service.
2. Apply power to the scanner/scale.
3. Wait five minutes after power up before proceeding.

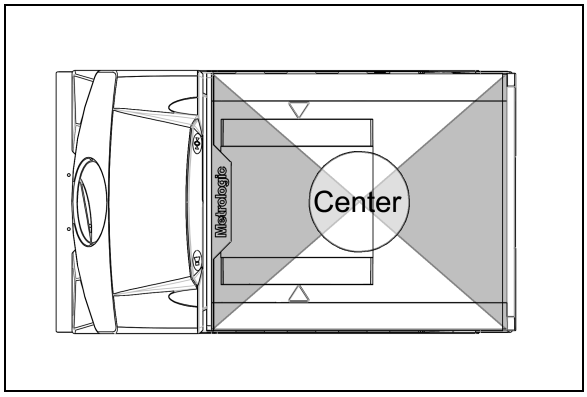


Figure 40. Scale Center

4. Place the 30.0 lb. weight **or** the 15 kg weight on the center of the scale. Allow the weight to settle.
5. Remove the weight.
6. Repeat three times to prime the scale before calibration.

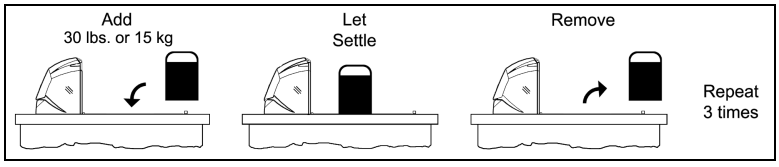


Figure 41. Priming the Scale for Calibration

CALIBRATION

Scale Calibration Procedure (lbs. or kg) with Remote Display*

1. Temporarily remove the platter and place it in a safe location.

> It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

2. If this is a currently installed scanner/scale* in need of calibration, cut and remove the calibration switch cover seal. If this is a new installation, cut and remove the factory-applied adhesive seal.

> Follow all Electo-Static Discharge (ESD) procedures when exposing internal scanner/scale components.

3. Remove the M3 screw securing the calibration switch/button cover.
Place the cover and screw in a safe location. Verify that the scale calibration switch is in the Run position.

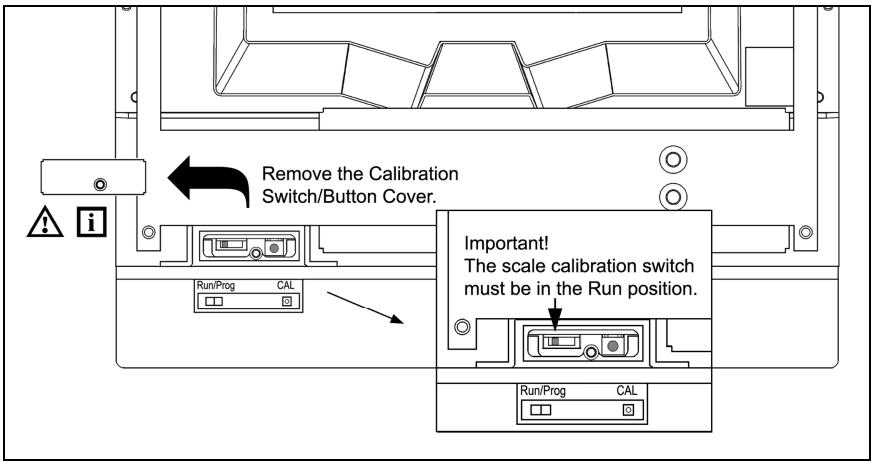


Figure 42. Calibration Switch/Button Cover Removal

4. **Enter full service access mode.** Power down the unit if necessary. Press and hold down the calibration push button then power up the scanner/scale. Release the calibration push button.

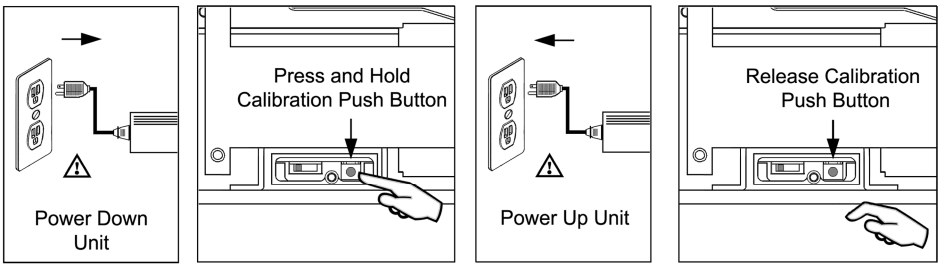


Figure 43. Entering Full Service Access Mode

See power source caution statement on page 8 of this manual.

** These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only.*

CALIBRATION

Scale Calibration Procedure (lbs. or kg) with Remote Display*

5. **Enter calibration mode.** The remote display will flash all of the characters available (*see illustration below*). Press the right arrow button twice (►)(►) *while the display flashes all characters*. The remote display should then read CAL 1.

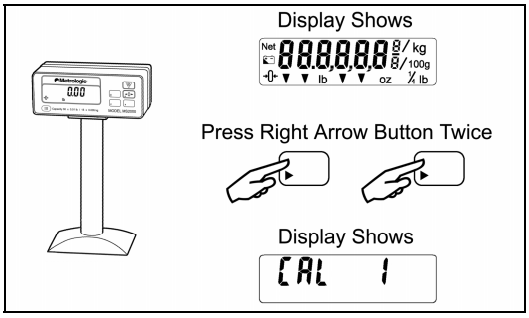


Figure 44. Enter Calibration Mode

6. Reinstall the platter onto the scanner/scale. Check the platter to ensure that it is seated properly and nothing is interfering with its freedom to move.

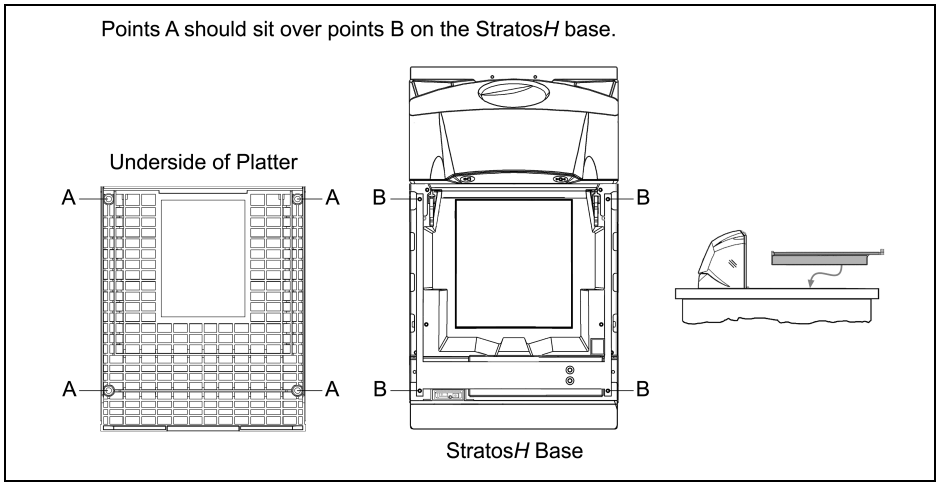


Figure 45. Install Platter

7. Make sure there is no load on the scale platter.

8. **Calibrate a zero load.** Press the right arrow (►) button once when the remote display reads CAL 1 and there is **no** load on the scale platter.

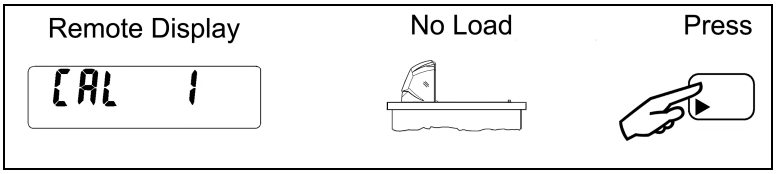


Figure 46.

** These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only.*

CALIBRATION

Scale Calibration Procedure (lbs. or kg) with Remote Display

9. Place a half load (15.00 lbs. or 7.500 kg) on the center of the scale platter then press the right arrow (►) button.

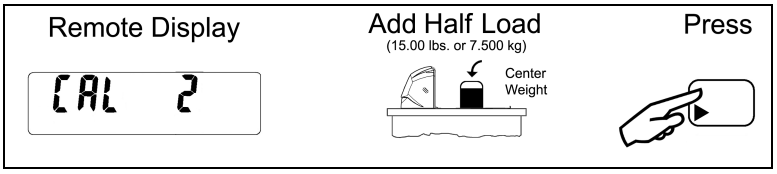


Figure 47.

10. Add an additional half load (15.00 lbs. or 7.500 kg) to the existing half to simulate a full load, center entire load then press the right arrow (►) button.

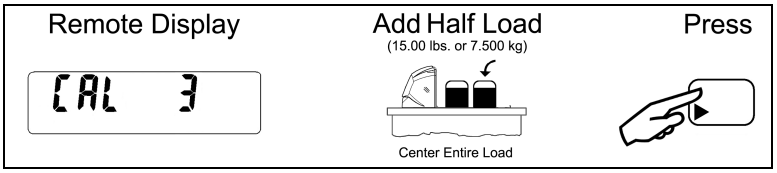


Figure 48.

11. Remove half of the load (15.00 lbs. or 7.500 kg), center the remaining load then press the right arrow (►) button.

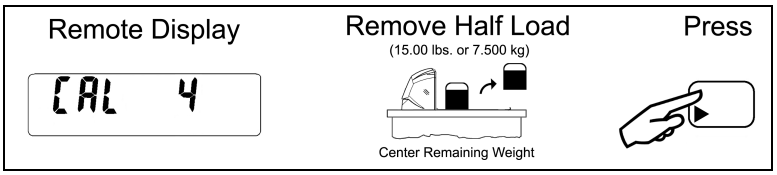


Figure 49.

12. Remove the remaining half load from the scale then press clear (C). The message *done* will flash briefly on the display.

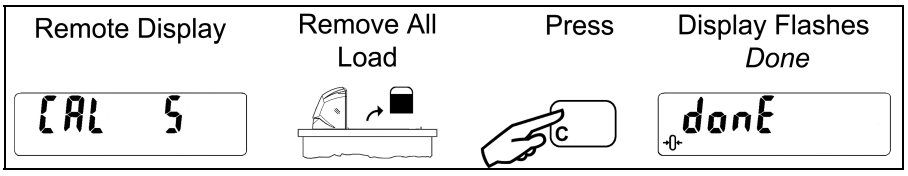


Figure 50.

13. **Exit calibration mode.** Press and hold the test button for at least 3 seconds then release. With no load on the scale the display should read 0.00 lb. or 0.000 kg.

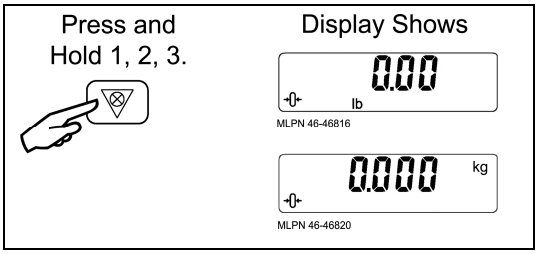


Figure 51.

* *These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only*.

CALIBRATION

Scale Calibration Procedure (lbs. or kg) with Remote Display*

14. The unit's calibration must now be verified as required by state and/or local Weights and Measures regulations (starting on page 48).

Need to Start Over?

To exit the calibration mode or restart the process, press the test button then the clear button.

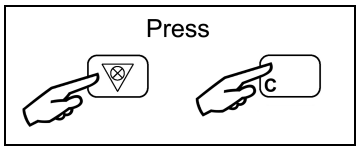


Figure 52.

* *These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only*.

CALIBRATION

Bar Code Calibration Procedure without Remote Display*

The following calibration procedure can be used when the remote scale display is not present. This procedure requires that the scanner/scale have a software serial number of 15001, or greater. The beeper volume switch is used to advance to the next stage of calibration and the LED display notifies the operator which 'calibration stage' (1 through 5) is active.

1. Temporarily remove the platter and place it in a safe location.

> It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

2. If this is a currently installed scanner/scale* in need of calibration, cut and remove the calibration switch cover seal. If this is a new installation, cut and remove the factory-applied adhesive seal.

> Follow all Electo-Static Discharge (ESD) procedures when exposing internal scanner/scale components.

3. Remove the M3 screw securing the calibration switch/button cover. Place the cover and screw in a safe location.

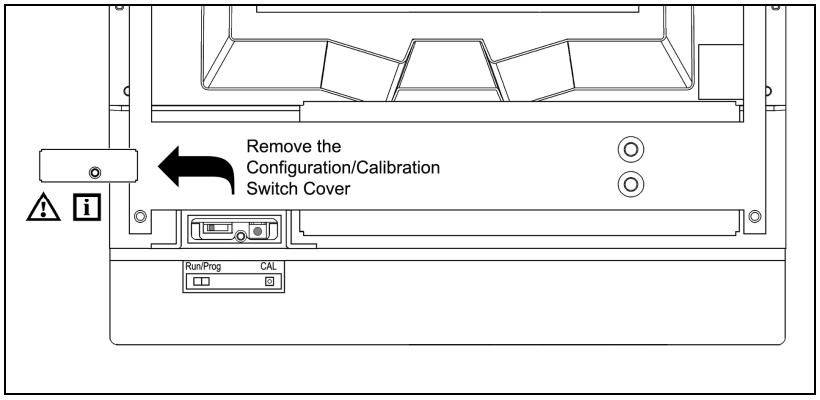


Figure 53. Calibration Switch Plate Cover Removal

4. **Enter the scale program mode.** Power down the unit and slide the scale program switch to the program position. *If the system is a dual cable system*, disconnect the host to scale RS232 cable from the unit.

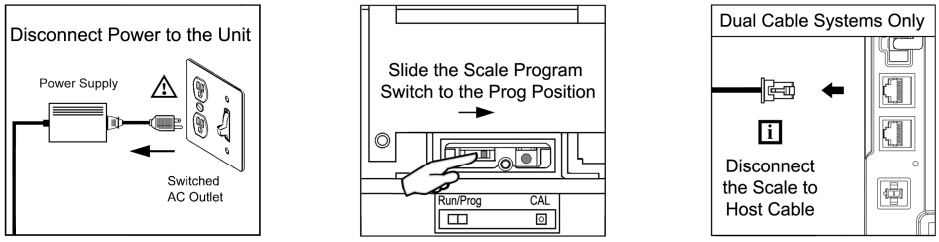


Figure 54. Entering the Scale Program Mode

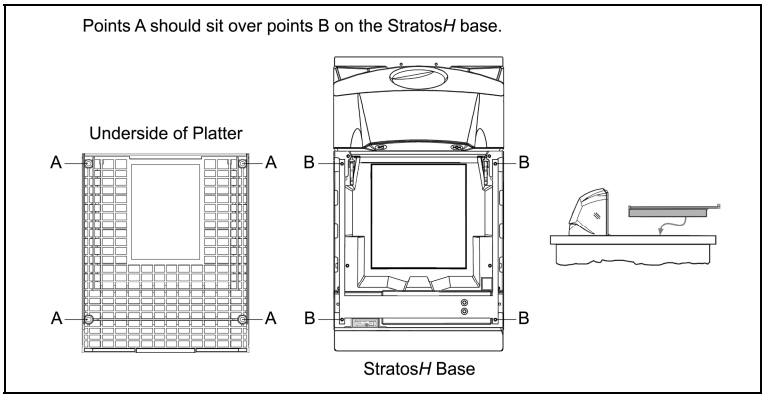
See power source caution statement on page 8 of this manual.

** These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only.*

CALIBRATION

Bar Code Calibration Procedure without Remote Display*

5. **Reinstall the platter and power up the unit**.



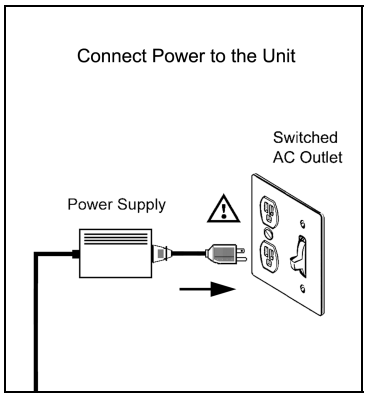
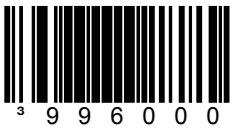


Figure 55. Platter Installation and Power Up

⚠ *See power source caution statement on page 8 of this manual.*

6. **Enter bar code calibration mode.** Use the vertical window to scan the following bar code. The scanner will beep once as it enters the bar code calibration mode and the calibration utility will start.

Bar Code Calibration Mode



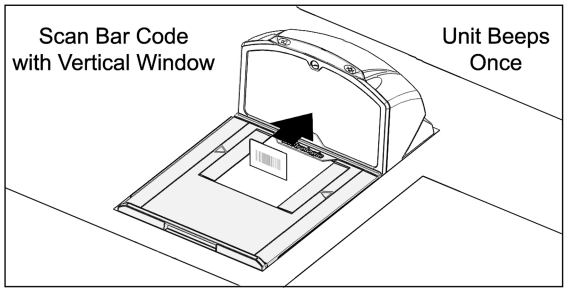


Figure 56. Entering Bar Code Calibration Mode

If a razz tone sounds, an error has occurred. Refer to *Diagnostic Indicator Display; Error Codes* starting on page 32 for additional information.

7. Make sure there is **no load** on the scale platter. The white LEDs will be used to indicate the current step in the calibration process.

8. **Calibrate a zero load.** The white LEDs will blink once periodically. Wait 8 to 10 seconds for scale stability then press the beeper volume switch one time. The beeper will beep one time indicating that the Cal 1 value has been stored.

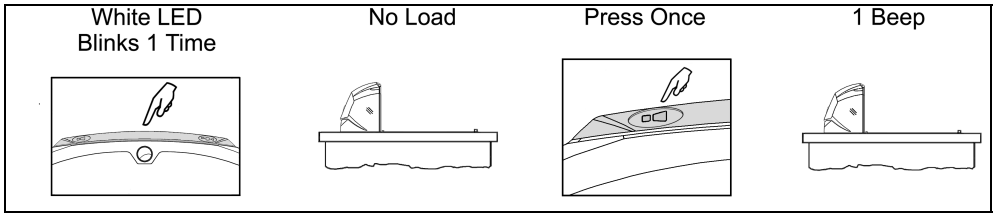


Figure 57.

** These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only.*

CALIBRATION

Bar Code Calibration Procedure without Remote Display*

9. Place a half load on the center of the scale platter. The white LEDs will blink twice periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep two times indicating that the Cal 2 value has been stored.

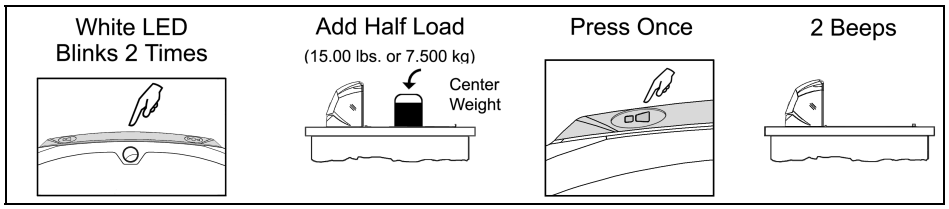


Figure 58.

10. Add an additional half load to the existing half to simulate a full load (center the entire load). The white LEDs will blink three times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep three times indicating that the Cal 3 value has been stored.

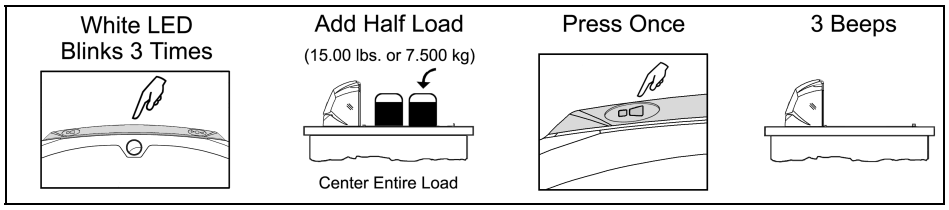


Figure 59.

11. Remove half of the load and center the remaining load. The white LEDs will blink four times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep four times indicating that the Cal 4 value has been stored.

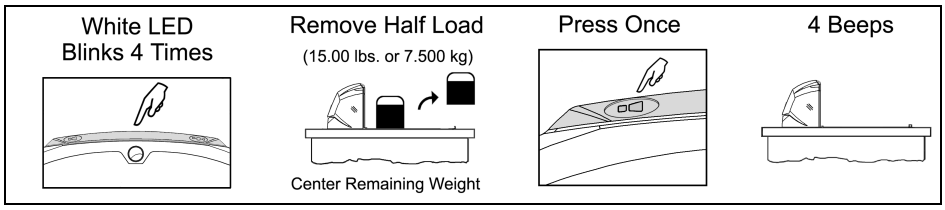


Figure 60.

12. Remove the remaining half load from the scale. The white LEDs will blink five times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep five times indicating that the Cal 5 value has been stored.

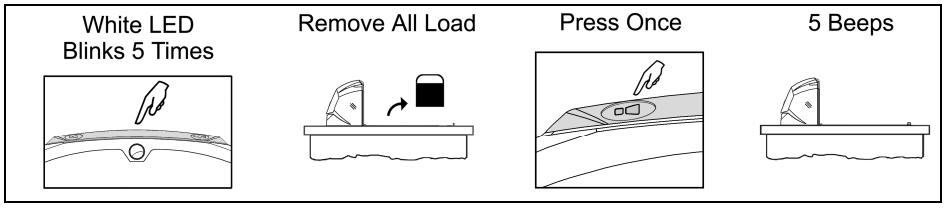


Figure 61.

* *These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only*.

CALIBRATION

Bar Code Calibration Procedure without Remote Display*

13. Calibration is now complete. The scanner will automatically restart, and beep one time, in 5 seconds.

14. In order to use the scale in the normal operating mode, the unit must be powered down and the scale program switch returned to the run position.

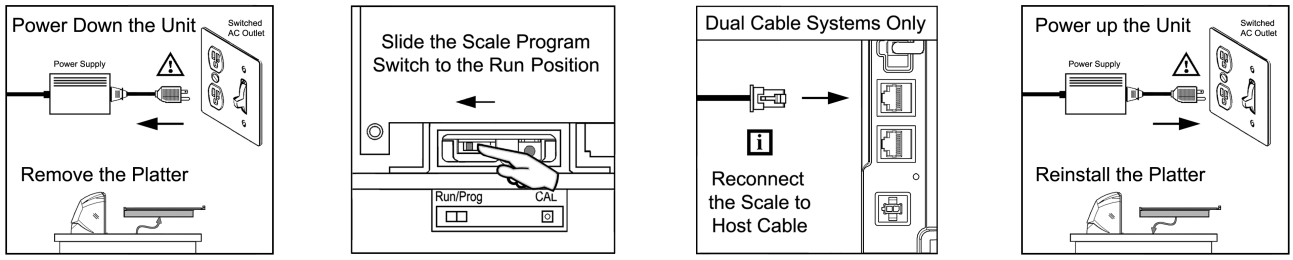


Figure 62.

⚠ *See power source caution statement on page 8 of this manual.*

15. The unit's calibration must now be verified as required by state and/or local Weights and Measures regulations (starting on page 48).

* *These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only*.

CALIBRATION VERIFICATION

U.S. Pounds (lbs.)

The following tests verify if the scale's Calibration is accurate. For Kilograms see instructions starting on page 49.

> The following tests are based on a 2-digit accuracy setting for pounds.

- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 5.00 lb. weight on the center of the scale platter and verify the display reads 5.00 lbs.
3. Place an additional 5.00 lb. weight on the center of the scale platter and verify the remote display reads between 9.99 and 10.01 lbs.
4. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 19.99 and 20.01 lbs.
5. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 29.99 and 30.01 lbs.
6. Remove all the weight from the scale platter and verify the display reads 0.00 lbs.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 15.00 lb. weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 14.99 and 15.01 lbs.
3. Remove the 15.00 lb. weight and verify the display reads 0.00 lbs.
4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).
5. Verify that the remote display reads 0.00 lbs. when all weight has been removed.

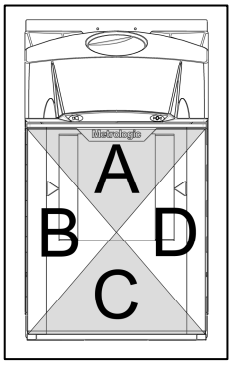


Figure 63. Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 30.00 lb. load on the center of the scale platter (use two 10.00 lb. weights and two 5.00 lb. weights). Verify the remote display reads between 29.99 and 30.01 lbs.
3. Remove a 10.00 lb. weight from the platter and center remaining weight. Verify that the remote display reads between 19.99 and 20.01 lbs.
4. Remove another 15.00 lbs. from the platter, center the remaining weight and verify the scale reads 5.00 lbs.
5. Remove all the weight from the platter and verify the scale has returned to 0.00 lbs.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

CALIBRATION VERIFICATION

Kilograms (kg)

The following tests verify if the scale's Calibration is accurate. For US Pounds see instructions starting on page 48.

The following tests are based on a 3-digit accuracy setting for kilograms.

- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 2.500 kg weight on the center of the scale platter and verify the display reads 2.500 kg.
3. Place an additional 2.500 kg weight on the center of the scale platter and verify the remote display reads between 4.995 kg and 5.005 kg.
4. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 9.995 kg. and 10.005 kg.
5. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 14.995 kg. and 15.005 kg.
6. Remove all the weight from the scale platter and verify the display reads 0.000 kg.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 7.500 kg weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 7.495 kg. and 7.505 kg.
3. Remove the 7.500 kg weight and verify the display reads 0.000 lbs.
4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).
5. Verify that the remote display reads 0.000 kg when all weight has been removed.

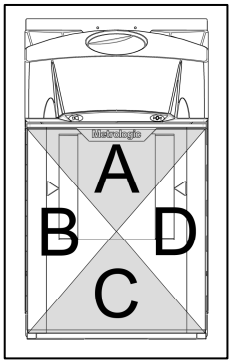


Figure 64. Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 15.000 kg load on the center of the scale platter. Verify the remote display reads between 14.995 kg. and 15.005 kg.
3. Remove 7.500 kg from the platter and center remaining weight. Verify that the remote display reads between 7.495 kg. and 7.505 kg.
4. Remove another 5.000 kg from the platter, center remaining weight and verify the scale reads 2.500 kg.
5. Remove all the weight from the platter and verify the scale has returned to 0.000 kg.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.

SECURITY SEAL INSTALLATION

> The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.
>
> It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.
>
> Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.

The security seal must only be installed if there were no errors during the scale calibration verification tests.

Pressure Sensitive Security Seal*

1. Temporarily remove the platter and place it in a safe location.
2. Reinstall the calibration switch/button cover.

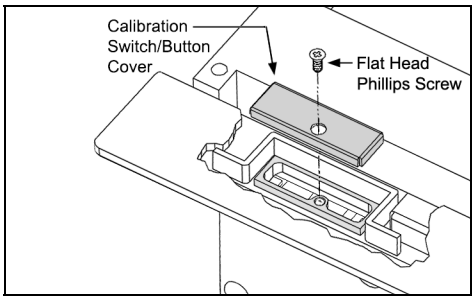


Figure 65. Calibration Switch/Button Cover

3. Apply the calibration security seal over the switch cover.

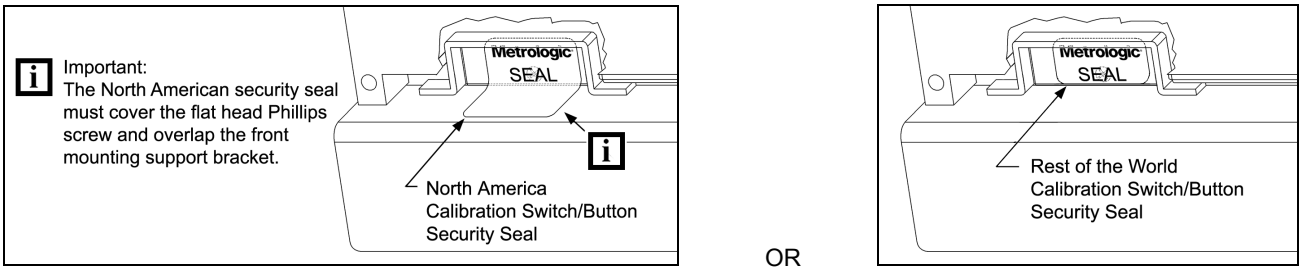


Figure 66. Calibration Switch/Button Security Seal Placement

4. Reinstall the platter.

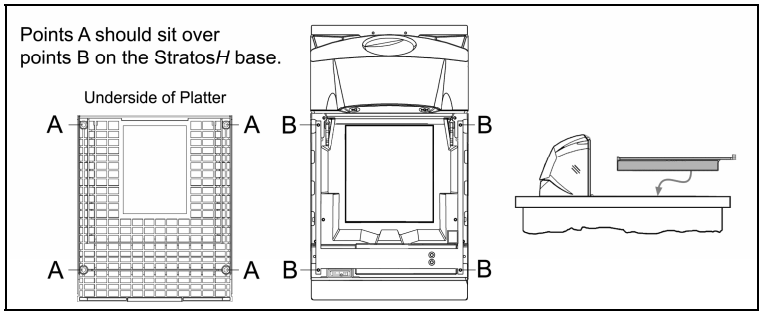


Figure 67. Platter Installation

** These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only.*

SECURITY SEAL INSTALLATION

Wire Security Seal (Seal Conversion Kit 46-46890)*

1. Temporarily remove the platter and place it in a safe location.
2. Install the calibration switch/button tabbed cover.
3. Secure the cover in place with the flat head Phillips screw provided.
4. Position the security seal cage over the tab on the calibration switch/button cover.
5. Thread the wire through the hole in the tab on the calibration switch/button cover and through the wire lock at the other end forming a loop (see *Figure 68*).
6. Crimp the lock closed to secure the wire, then pack the wire and lock into the cage.
7. Insert the tab on the end of the transparent cage cover into the slot on the security cage then snap the other end into place over the security cage hook.
8. Reinstall the platter.

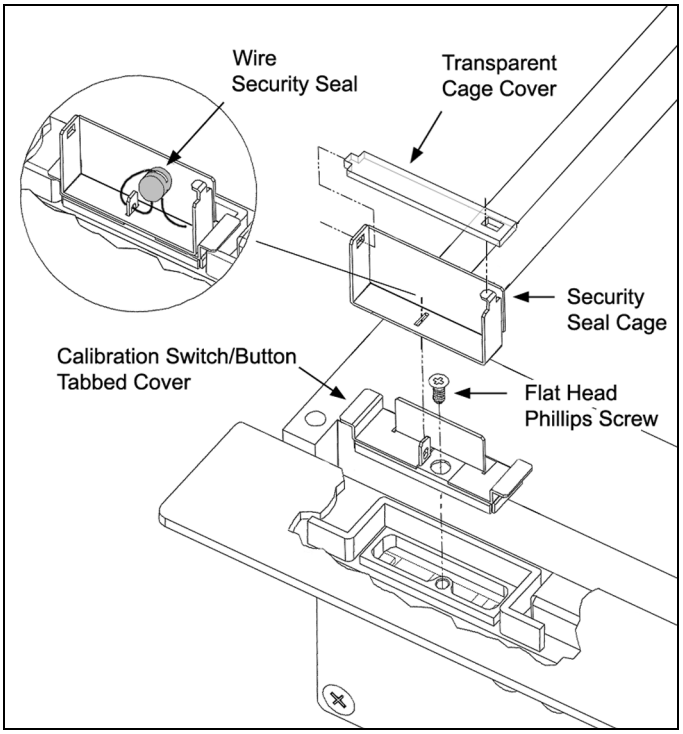


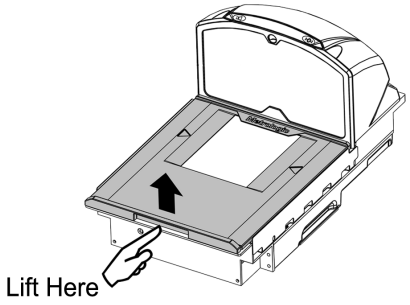
Figure 68. Calibration Switch/Button Wire Security Seal Assembly.

* *These procedures are for MS2320 StratosH Scanner/**Avery** Scale models only*.

PLATTER / HORIZONTAL SCAN WINDOW REPLACEMENT

Platter/Horizontal Scan Window Removal

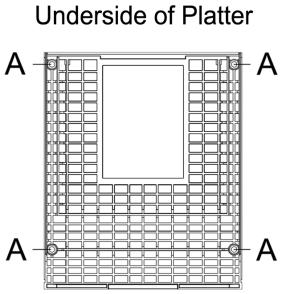
No hardware or tools are required to remove the platter / horizontal scan window. Lift the platter off the scanner base by using the finger recess located at the end of the platter farthest from the Metrologic logo.



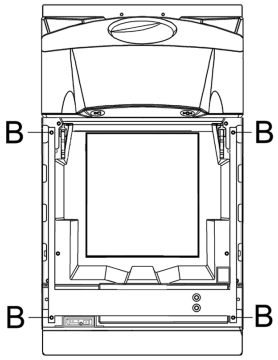
MS2320 Stratos*H* Scanner/Avery Scale Model

Platter/Horizontal Scan Window Installation

When installing the platter, it is important to ensure the platter is positioned properly. Carefully align points A on the platter with points B on the MS2320 base unit. The platter should sit over the four bolts on the scale arms preventing it from sliding out of place.



MS2320 Platter *



MS2320 Base Unit

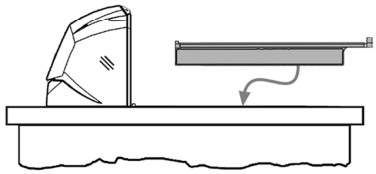


*Figure 69. Platter/Horizontal Scan Window Replacement**

* *See replacement parts on page 3.*

VERTICAL SCAN WINDOW REPLACEMENT (MLPN 46-46889)

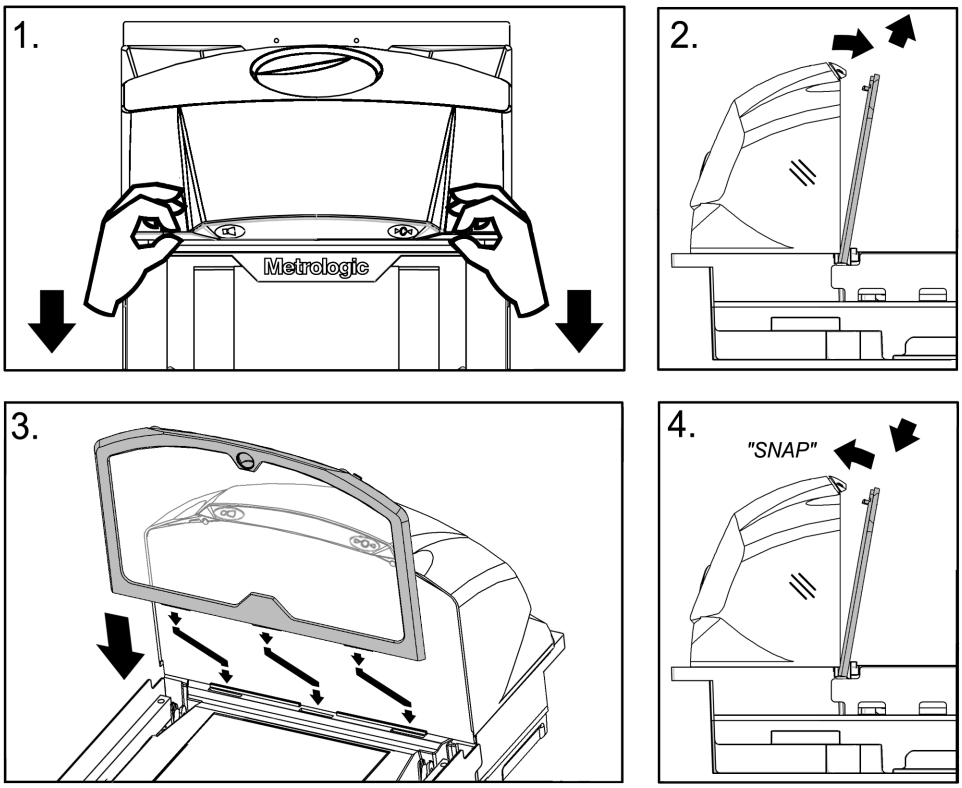


Figure 70. Vertical Scan Window Replacement

DAILY MAINTENANCE

Smudges and dirt can interfere with the proper scanning of a bar code. Therefore, the horizontal and vertical output windows will need occasional cleaning.

For the glass window:

1. Spray glass cleaner onto lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

For the inner plastic window:

1. Use mild soap and water with lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

Routinely check and clean the base unit to ensure that no debris is interfering with the platter movement.

TROUBLESHOOTING

The following guide is for reference purposes only. Contact a Metrologic representative at 1-800-ID-METRO or 1-800-436-3876 to preserve the limited warranty terms.

Symptom	Possible Cause(s)	Solution
All Interfaces		
No LEDs, beep or motor spin.	No power is being supplied to the scanner.	Check the transformer, outlet and the power strip. Make sure the power cable is plugged into the scanner.
During power up the unit beeps 3 times.	A non-volatile RAM failure.	Contact a Metrologic service representative, if the unit will not hold the configuration.
During power up the unit razzes continuously.	There has been a diagnostic failure.	Contact a Metrologic service representative, if the unit will not function.
During power up the unit razzes once and the blue LED flashes.	A VLD failure.	Contact a Metrologic service representative.
During power up the unit razzes twice and both LEDs flash.	Scanner motor failure.	Contact a Metrologic service representative.
There are multiple scans upon presentation of code.	The *same symbol timeout* is set to short.	Adjust same symbol timeout for a longer time.
The unit powers up but does not beep.	The beeper is disabled.	Enable the beeper.
	No volume is selected.	Select a volume.
	No tone is selected.	Select a tone.
The unit powers up but does not scan and/or beep.	The unit is trying to scan a particular symbology that is not enabled.	UPC/EAN and Code 128 are enabled by default. Verify that the type of bar code being read has been selected.
	The unit has been configured for a character length lock or a minimum length and the bar code being scanned does not satisfy the configured criteria.	Verify that the bar code that is being scanned falls into the criteria. *Typical of Non-UPC/EAN codes. The scanner defaults to a minimum of 4 character bar code.*
The unit scans a bar code, but locks up after the first scan (*the white LED stays on*).	The scanner is configured to support some form of host handshaking but is not receiving the signal.	If the scanner is setup to support ACK/NAK, RTS/CTS, XON/XOFF or D/E, verify that the host cable and host are supporting the handshaking properly.
The unit scans but the data transmitted to the host is incorrect.	The scanner's data format does not match the host system requirements.	Verify that the scanner's data format matches that required by the host. Make sure that the scanner is connected to the proper host port.

Symptom	Possible Cause(s)	Solution
All Interfaces		
Scanner beeps at some bar codes and NOT for others of the same bar code symbology.	The aspect ratio of the bar code is out of tolerance.	Check if it is a check digit, character or border problem.
	Check the character length lock.	
	The bar code may have been printed incorrectly.	
	The scanner is not configured correctly for this type of bar code.	Check if check digits are set properly.
	The minimum symbol length setting does not work with the bar code.	Check if the correct minimum symbol length is set.
RS232 Only		
The unit powers up OK and scans OK but does not communicate properly to the host.	The com port at the host is not working or is not configured properly.	Check to make sure that the baud rate and parity of the scanner and the communication port match and the program is looking for RS232 data.
	The cable is not connected to the proper com port.	
	The com port is not operating properly.	
The host is receiving data but the data does not look correct.	The scanner and host may not be configured for the same interface.	Check that the scanner and the host are configured for the same interface.
Characters are being dropped.	The intercharacter delay needs to be added to the transmitted output.	Add some intercharacter delay to the transmitted output by using the MetroSelect Configuration Guide (MLPN 00-02407x).
Aux Port Operation With Any Interface		
The secondary scanner is not functioning.		Refer to the user's guide provided with the secondary scanner.
The secondary scanner powers up but data is not relayed to the host.	The secondary scanner cable may not be connected to the proper port on the Stratos*H*.	Ensure that the secondary scanner is connected to the Stratos*H*'s com port marked "Aux" port.
	The auxiliary com port may not be operating properly.	* The Stratos*H* must be configured to enable the auxiliary port.
		The auxiliary input port's data format must match the main output format of the secondary scanner.
* Refer to the MS2xxx Stratos Series Configuration Addendum (MLPN 00-02034x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Metrologic Scanner.		

RS232 DEMONSTRATION PROGRAM

If an RS232 scanner is not communicating with your IBM compatible PC, key in the following BASIC program to test that the communication port and scanner are working. This program is for demonstration purposes only. It is only intended to prove that cabling is correct, the com port is working, and the scanner is working. If the bar code data displays on the screen while using this program, it only demonstrates that the hardware interface and scanner are working. At this point, investigate whether the application software and the scanner configuration match. If the application does not support RS232 scanners, a software wedge program that will take RS232 data and place it into a keyboard buffer may be needed. This program tells the PC to ignore RTS-CTS, Data Set Ready (DSR) and Data Carrier Detect (DCD) signals. If the demonstration program works and yours still does not, jumper RTS to CTS and Data Terminal Reading (DTR) to DCD and DSR on the back of your PC.

```
10      CLS
20      ON ERROR GOTO 100
30      OPEN “COM1:9600,S,7,1,CS0,DS0,CD0,LF” AS #1
35      PRINT “SCAN A FEW BAR CODES”
40      LINE INPUT #1, BARCODE$
50      PRINT BARCODE$
60      K$ = INKEY$: IF K$ = CHR$(27) THEN GOTO 32766
70      GOTO 40
100     PRINT “ERROR NO.”; ERR; “PRESS ANY KEY TO TERMINATE.”
110     K$ = INKEY$: IF K$ = “” THEN GOTO 110
32766   CLOSE: SYSTEM
32767   END
```

DEFAULT SETTINGS

COMMUNICATION PARAMETERS

Many functions of the scanner can be "configured" - that is, enabled or disabled. The scanner is shipped from the factory pre-configured to a set of default conditions. The default parameter of the scanner has an asterisk (*) in the charts on the following pages. If an asterisk is not in the default column then the default setting is Off or Disabled. Every interface does not support every parameter. If the interface supports a parameter listed in the charts on the following pages, a check mark will appear.

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
UPC/EAN	*	✓	✓	✓	✓
Code 128	*	✓	✓	✓	✓
Code 93		✓	✓	✓	✓
Codabar		✓	✓	✓	✓
Interleaved 2 of 5 (ITF)		✓	✓	✓	✓
MOD 10 Check on ITF		✓	✓	✓	✓
Code 11		✓	✓	✓	✓
Code 39		✓	✓	✓	✓
Full ASCII Code 39		✓	✓	✓	✓
MOD 43 CD on Code 39		✓	✓	✓	✓
Transmit Mode 43 CD		✓	✓	✓	✓
Paraff		✓	✓	✓	✓
Paraff Lead “A”		✓	✓	✓	✓
Allow Paraff Failures		✓	✓	✓	✓
French PC Terminal			✓		
MSI-Plessey		✓	✓	✓	✓
Airline (15 digit) 2 of 5		✓	✓	✓	✓
Airline (13 digit) 2 of 5		✓	✓	✓	✓
Matrix 2 of 5		✓	✓	✓	✓
Telepen		✓	✓	✓	✓
UK Plessey		✓	✓	✓	✓
STD 2 of 5		✓	✓	✓	✓
MSI-Plessey 10/10 Check Digit		✓	✓	✓	✓
MSI-Plessey MOD 10 Check Digit		✓	✓	✓	✓
ITF Symbol Lengths	Variable	✓	✓	✓	✓
ITF Minimum Symbol Length	6	✓	✓	✓	✓
Symbol Length Lock	None	✓	✓	✓	✓
Minimum Symbol Length	4	✓	✓	✓	✓
Trioptic		✓	✓	✓	✓
RSS14 Enable		✓	✓	✓	✓
RSS14 ID “]e0”	*	✓	✓	✓	✓
RSS14 App ID “01”	*	✓	✓	✓	✓
RSS14 Check Digit	*	✓	✓	✓	✓

▲ *Applicable for IBM® Host applications.*

DEFAULT SETTINGS

COMMUNICATION PARAMETERS

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
RSS Expanded Enable		✓	✓	✓	✓
Expanded ID "]e0"	*	✓	✓	✓	✓
RSS Limited Enable		✓	✓	✓	✓
RSS Limited ID "]e0"	*	✓	✓	✓	✓
RSS Limited App ID "01"	*	✓	✓	✓	✓
RSS Limited Check Digit	*	✓	✓	✓	✓
DTS/SIEMENS		✓			
DTS/NIXDORF	*	✓			
NCR F		✓			
NCR S		✓			
Beeper Tone	Normal	✓	✓	✓	✓
Beep Transmit Sequence	Before Transmit	✓	✓	✓	✓
Beeper Volume	Loudest	✓	✓	✓	✓
Power-Up Disable Good Scan Beep		✓	✓	✓	✓
Communication Timeout	None	✓	✓	✓	✓
Razzberry Tone on Timeout		✓	✓	✓	✓
Three Beeps on Timeout		✓	✓	✓	✓
Fast Beep		✓	✓	✓	✓
Beep Twice on Supplements		✓	✓	✓	✓
No Beeps on Timeout	*	✓	✓	✓	✓
5 Retries Before Timeout		✓	✓	✓	✓
Timeout In …	2 secs.	✓	✓	✓	✓
Laser Off Between Records		✓	✓	✓	✓
Variable Laser Off Delay	5 - 635 msec	✓	✓	✓	✓
Disable Button Control of Power Save Mode	*	✓	✓	✓	✓
Disable Button Control of Beep Volume		✓	✓	✓	✓
Flash LED on Good Scan	*	✓	✓	✓	✓
Reverse LED Convention		✓	✓	✓	✓
Flash LED on Good Scan	*	✓	✓	✓	✓
Enter Power Save Mode	10 mins.	✓	✓	✓	✓
Blink Power Save Mode		✓	✓	✓	✓
Laser OFF Power Save Mode		✓	✓	✓	✓
Laser & Motor OFF Power Save Mode		✓	✓	✓	✓
Dual Action Power Save Mode #1		✓	✓	✓	✓

▲ *Applicable for IBM® Host applications*.

DEFAULT SETTINGS

COMMUNICATION PARAMETERS

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
Dual Action Power Save Mode #2	*	✓	✓	✓	✓
Same Symbol Rescan Timeout: 500 msecs Configurable in 50 msec steps (MAX 6.35 seconds)	500 msec	✓	✓	✓	✓
Intercharacter Delay Configurable in 1 msec steps (MAX 255 msecs)	1 msecs 10 msecs in KBW	✓	✓	✓	
Number of Scan Buffers	1	✓	✓	✓	✓
UPC GTIN-14 Format		✓	✓	✓	✓
EAN-8 Enable	*	✓	✓	✓	✓
Transmit EAN-8 Check Digit	*	✓	✓	✓	✓
Convert EAN-8 to EAN-13		✓	✓	✓	✓
EAN-8 with Small Borders		✓	✓	✓	✓
EAN-13 Enable	*	✓	✓	✓	✓
Transmit EAN-13 Check Digit	*	✓	✓	✓	✓
UPC-A Enable	*	✓	✓	✓	✓
Convert UPC-A to EAN-13		✓	✓	✓	✓
Transmit UPC-A Check Digit	*	✓	✓	✓	✓
Transmit UPC-A Number System	*	✓	✓	✓	✓
Transmit UPC-A Manufacturers ID.	*	✓	✓	✓	✓
Transmit UPC-A Item ID	*	✓	✓	✓	✓
UPC-E Enable	*	✓	✓	✓	✓
Expand UPC-E		✓	✓	✓	✓
Transmit UPC-E Lead ‘0’	*	✓	✓	✓	✓
Transmit UPC-E Check Digit		✓	✓	✓	✓
Disable UPC-E Auto Redundancy	*	✓	✓	✓	✓
Transmit Codabar Start/Stop Characters		✓	✓	✓	✓
Codabar CLSI		✓	✓	✓	✓
Dual Field Codabar		✓	✓	✓	✓
Tab Between Dual field Codabar		✓	✓	✓	✓
Codabar CLSI Check Digit		✓	✓	✓	✓
Codabar 7-Check Check Digit		✓	✓	✓	✓
Codabar Mod-16 Check Digit		✓	✓	✓	✓
Transmit MSI Plessey Check Digits		✓	✓	✓	✓
Number of MSI Plessey Check Digits	0	✓	✓	✓	✓
UK Plessey A to X Convert		✓	✓	✓	✓
UK Plessey Special 12 Character Format		✓	✓	✓	✓
Transmit UK Plessey Check Digit		✓	✓	✓	✓

▲ *Applicable for IBM® Host applications.*

DEFAULT SETTINGS

COMMUNICATION PARAMETERS

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
EAN 128 Enable		✓	✓	✓	✓
Enable French Pharma		✓	✓	✓	✓
Enable Matrix 2 of 5 Check Digit		✓	✓	✓	✓
Enable Hong Kong 2 of 5		✓	✓	✓	✓
Enable Alpha Telepen		✓	✓	✓	✓
Telepen Convert Lead '^L' to 'E'		✓	✓	✓	✓
Enable Code 11 Check Digit		✓	✓	✓	✓
Parity	Space		✓		
Baud Rate	9600		✓		
8 Data Bits			✓		
7 Data Bits	*		✓		
Stop Bits	2		✓		
RTS / CTS Enabled			✓		
Message RTS			✓		
Character RTS	*		✓		
ACK / NAK			✓		
O / N Handshaking			✓		
Host Bell / Cancel			✓		
Xon / Xoff			✓		
No Transmit Without DTR Present			✓		
French PC Terminal Emulation			✓		
"D/E" Disable Command			✓		
"Z/R" Disable Command			✓		
"F/L" Laser Command			✓		
"M/O" Motor Enable Commands			✓		
Beep on Bell			✓		
Razz on 'z'			✓		
CTS Scan Transmit Enable			✓		
Limit 1 Scan per CTS			✓		
Activate on DTR			✓		
Activate on DC2 Character			✓		
Xmit No Read Message on DC2 Timeout			✓		
No Transmit LED During No Read Message			✓		
Configurable "No Read" Message			✓		
Recv "I" = Transmit "METROLOGIC"			✓		
Recv "i" = Transmit Scanner ID Byte			✓		

▲ *Applicable for IBM® Host applications.*

DEFAULT SETTINGS

COMMUNICATION PARAMETERS

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
STX Prefix			✓		✓
TAB Prefix			✓		✓
Metrologic Prefix			✓		✓
UPC Prefix			✓		✓
ETX Suffix			✓		✓
TAB Suffix			✓		✓
Carriage Return Suffix	*		✓		✓
Line Feed Suffix	*		✓		✓
UPC Suffix			✓		✓
Transmit LRC			✓		✓
Start LRC on 1st Byte			✓		✓
Start LRC on 2nd Byte			✓		✓
'c' Prefix for UPC			✓		✓
'$' Prefix for UPC			✓		✓
Configurable Prefix Characters	10 avail		✓		✓
Configurable Suffix Characters	10 avail		✓		✓
Predefined Code ID Sets	Multiple Selections		✓		✓
Configurable Prefix for Code Types			✓		✓
Configurable Suffix for Code Types			✓		✓
Configurable Code Length Locks	7 avail		✓	✓	✓
Code Selects	7 avail		✓	✓	✓
Transmit High Priority Code at Timeout			✓	✓	✓
Random Code Deselects	1 Set		✓	✓	✓
Do not transmit Similar Codes			✓	✓	✓
Target Code Deselects	1 Set		✓	✓	✓
Transmit Lower Priority Codes			✓	✓	✓
Code Select / Deselect Timeout 0.1 to 25.5 seconds	5 sec		✓	✓	✓
Razz on Code Select Timeout	*		✓	✓	✓
Replace 1 Character in Transmission			✓		✓
Japan Dual Field Code Selects			✓	✓	✓
EAN-13 Only in Japan Dual Field			✓	✓	✓
Two Digit Supplements		✓	✓	✓	✓
Five Digit Supplements		✓	✓	✓	✓
Require Supplements		✓	✓	✓	✓
Remote Supplement Support		✓	✓	✓	✓
Two Digit Redundancy		✓	✓	✓	✓

▲ *Applicable for IBM® Host applications.*

COMMUNICATION PARAMETERS

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
Five Digit Redundancy		✓	✓	✓	✓
Enable Coupon Code 128		✓	✓	✓	✓
Transmit Coupon ‘]C1’	*	✓	✓	✓	✓
Group Separator	*	✓	✓	✓	✓
Coupon Code Can Begin with ’4’		✓	✓	✓	✓
Enable EAN-99 Coupon Code		✓	✓	✓	✓
Bookland Supplements		✓	✓	✓	✓
French 378/379 Supplements		✓	✓	✓	✓
German 434/439 Supplements		✓	✓	✓	✓
Convert Bookland to ISBN		✓	✓	✓	✓
Bookland 979 Supplements		✓	✓	✓	✓
Convert 979 to ISBN		✓	✓	✓	✓
Convert 290 to ISBN		✓	✓	✓	✓
Reformat ISBN		✓	✓	✓	✓
Add EAN Article ID		✓	✓	✓	✓
Transmit ISBN / EAN Check Digit		✓	✓	✓	✓
977 Supplements (2-digit)		✓	✓	✓	✓
Convert 977 to ISSN		✓	✓	✓	✓
Reformat ISSN		✓	✓	✓	✓
Transmit ISSN Check Digit		✓	✓	✓	✓
414 / 419 requires Supplements		✓	✓	✓	✓
Number System 2 Enables Supplements		✓	✓	✓	✓
Number System 2 Requires 5-Digit Supplements		✓	✓	✓	✓
Number System 5 Enables Supplements		✓	✓	✓	✓
Allow Code ID’s with Supplements		✓	✓	✓	✓
High Density Codes	*	✓	✓	✓	✓
Medium Density Codes		✓	✓	✓	✓
Low Density Codes		✓	✓	✓	✓

▲ *Applicable for IBM® Host applications.*

COMMUNICATION PARAMETERS

Default Settings for *Aux* Interface

The secondary scanner and the Stratos*H* series communicate always via RS232. Data is relayed to the host via various primary interfaces

PARAMETER	DEFAULT	OCIA	RS232	RS485▲	USB
Aux Baud Rate	38400	✓	✓	✓	✓
Aux Parity	none	✓	✓	✓	✓
Aux Data Bits	8	✓	✓	✓	✓
Aux Stop Bits	1	✓	✓	✓	✓
Aux Character RTS	*	✓	✓	✓	✓
Aux Message RTS		✓	✓	✓	✓
Aux Ack/Nak	*	✓	✓	✓	✓
Aux Xon/Xoff	*	✓	✓	✓	✓
Aux D/E Commands		✓	✓	✓	✓
Aux M/O Commands		✓	✓	✓	✓
Aux F/L Commands		✓	✓	✓	✓
Aux Intercharacter Delay	1 msec	✓	✓	✓	✓
Aux Port Data Format	None (Disabled)	✓	✓	✓	✓
Aux Port to Stratos***SCHOOL***†	None (Disabled)	✓	✓	✓	✓

† When the *Aux Port* connects to a host port, the *Aux Port Data Format* should be disabled (requires cable MLPN 57-57008x-N-3).

▲ *Applicable for IBM® Host applications.*

SCANNER PINOUT CONNECTIONS

The Stratos*H* scanner terminates to 10-pin modular jacks located on the bottom of the unit. The serial number label indicates the model number and interface of the scanner.

EAS In	
Pin	**Function**
1	EAS In
2	EAS Out

DC Power In	
Pin	**Function**
1	12VDC
2	Ground
3	5.2VDC

Auxiliary RS232 In	
Pin	**Function**
1	Ground
2	RS232 Receive Input
3	RS232 Transmit Output
4	RS232 RTS In
5	RS232 CTS Out
6-8	*No Connect*
9	+5V Out
10	*No Connect*

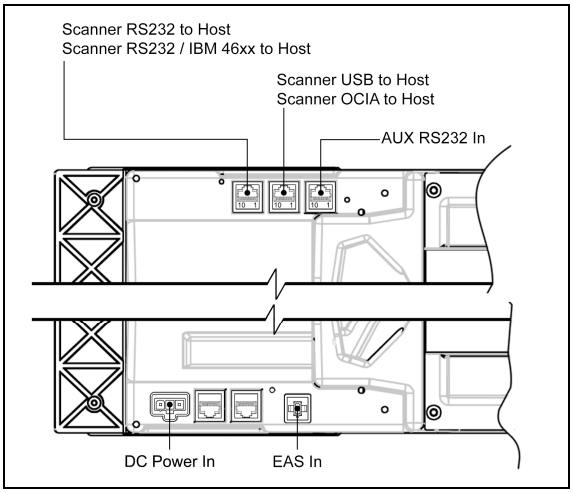


Figure 71. Connector Layout on the Bottom of the Scanner

Scanner RS485▲ to Host	
Pin	**Function**
1	Signal Ground
2	RS232 TX Output
3	RS232 RX Input
4	*Reserved for RS232 Interface*
5	*Reserved for RS232 Interface*
6	*Reserved for RS232 Interface*
7	IBM B-
8	IBM B+
9	*No Connect*
10	*No Connect*

Scanner RS232 to Host	
Pin	**Function**
1	Signal Ground
2	RS232 TX Output
3	RS232 RX Input
4	RS232 RTS Output
5	RS232 CTS Input
6	RS232 DTR Input
7	*Reserved for RS485▲ Interface*
8	*Reserved for RS485▲ Interface*
9	*No Connect*
10	*No Connect*

Scanner OCIA to Host	
Pin	**Function**
1	Signal Ground
2	*Reserved*
3	*Reserved*
4	R Data
5	R Data Return
6	Clock In
7	Clock Out
8	Clock In Return / Clock Out Return
9	*No Connect*
10	Shield Ground

Scanner USB to Host	
Pin	**Function**
1	Signal Ground
2	Reserved
3	Reserved
4	*Reserved for OCIA Interface*
5	*Reserved for OCIA Interface*
6	Data +
7	PC+5VDC
8	Data -
9	*No Connect*
10	Shield Ground

▲ *Applicable for IBM® Host applications.*

Specifications are subject to change without notice.

SCANNER PINOUT CONNECTIONS

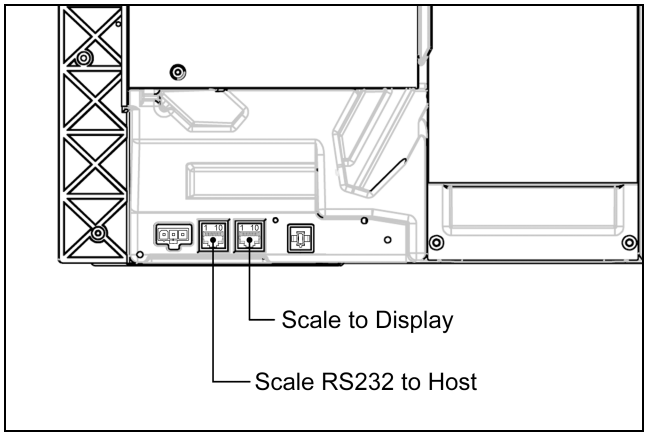


Figure 72. Scale Data (Dual Cable Applications) and Scale Display Connector Layout

Scale RS232 to Host
Scale Data, Dual Cable Applications

Pin	Function**
1	Ground
2	Scale RS232 TX Out
3	Scale RS232 RX In
4	Scale RS232 RTS Out
5	Scale RS232 CTS In
6	*No Connect*
7	*No Connect*
8	*No Connect*
9	*Reserved*
10	Shield

Scale to Display

Pin	Function**
1	SIG1
2	SIG2
3	SIG3
4	SIG4
5	SIG5
6	SIG6
7	SIG7
8	SIG8
9	*No Connect*
10	*No Connect*

*** All signals referenced from the StratosH scanner.*

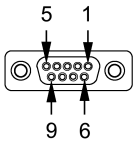
Specifications are subject to change without notice.

CABLE CONNECTOR CONFIGURATIONS

The following cables are examples of some of the standard cables that may be shipped with the Stratos*H* scanner. Please keep in mind that every application is unique and the cables received with the Stratos*H* may be custom cables that are not shown below.

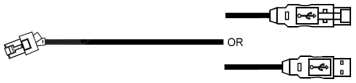
RS232 Interface Cable, MLPN 57-57000*x*-N-3

Pin	Function**
1	Shield Ground
2	RS232 TX Output
3	RS232 RX Input
4	DTR Input
5	Signal Ground
6	*No Connect*
7	CTS Input
8	RTS Output
9	*No Connect*



9-Pin D-Type Connector

Full Speed USB Cable,
MLPN 57-57200*x*-N-3 OR MLPN 57-57006*x*-N-3



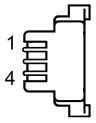
Pin	Function**
1	PC+5V USB
2	Data -
3	Data +
4	Signal Ground

Locking, Type A
57-57200*x*-N-3

Non-Locking, Type A
57-57006*x*-N-3

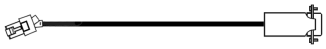
RS485▲ Cable, MLPN 57-57004*x*-N-3

Pin	Function**
1	Signal Ground
2	IBM A+
3	IBM B-
4	*No Connect*

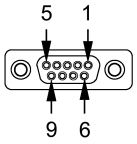


4-Pin SDL

OCIA Cable, MLPN 57-57015*x*-N-3



Pin	Function**
1	Shield Ground
2	R Data
3	R Data Return
4	Clock Out
5	Signal Ground
6	Clock In Return / Clock Out Return
7	
8	Clock In
9	*No Connect*



9-Pin D-Type Connector

*** All signals referenced from the StratosH scanner.*

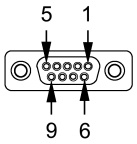
▲ *Applicable for IBM® Host applications.*

Specifications are subject to change without notice.

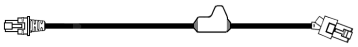
CABLE CONNECTOR CONFIGURATIONS

Aux Port Configuration Cable*, MLPN 57-57008x-N-3	

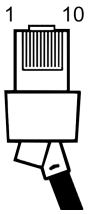
Pin	Function**
1	*No Connect*
2	Output from Scanner
3	Input to Scanner
4	*No Connect*
5	Ground
6-9	*No Connect*



9-Pin D-Type Connector

RS232 LSO/AUX Cable, MLPN 57-57099x -3	

Pin	Function†
1	Signal Ground
2	RS232 from Aux / Secondary Scanner
3	RS232 to Aux / Secondary Scanner
4	RTS from Aux / Secondary Scanner
5	CTS to Aux / Secondary Scanner
6-8	*No Connect*
9	+5VDC – Transformer / Direct
10	Shield Ground



10-Position Angled Modular Plug

** This configuration cable was designed to be used with the StratosH auxiliary connector only.*

*** All signals are referenced from the StratosH scanner.*

† *All signals are referenced from the auxiliary / secondary scanner.*

Specifications are subject to change without notice.

Safety

ITE Equipment

IEC 60950-1, EN 60950-1

Laser

Laser Class 1: IEC 60825-1:1993+A1+A2,
EN 60825-1:1994+A1+A2

⚠Caution

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure. Under no circumstances should the customer attempt to service the laser scanner. Never attempt to look at the laser beam, even if the scanner appears to be nonfunctional. Never open the scanner in an attempt to look into the device. Doing so could result in hazardous laser light exposure. The use of optical instruments with the laser equipment will increase eye hazard.

⚠Atención

La modificación de los procedimientos, o la utilización de controles o ajustes distintos de los especificados aquí, pueden provocar una luz de láser peligrosa. Bajo ninguna circunstancia el usuario deberá realizar el mantenimiento del láser del escáner. Ni intentar mirar al haz del láser incluso cuando este no esté operativo. Tampoco deberá abrir el escáner para examinar el aparato. El hacerlo puede conllevar una exposición peligrosa a la luz de láser. El uso de instrumentos ópticos con el equipo láser puede incrementar el riesgo para la vista.

⚠Attention

L'emploi de commandes, réglages ou procédés autres que ceux décrits ici peut entraîner de graves irradiations. Le client ne doit en aucun cas essayer d'entretenir lui-même le scanner ou le laser. Ne regardez jamais directement le rayon laser, même si vous croyez que le scanner est inactif. N'ouvrez jamais le scanner pour regarder dans l'appareil. Ce faisant, vous vous exposez à une rayonnement laser qú êst hazardous. L'emploi d'appareils optiques avec cet équipement laser augmente le risque d'endommagement de la vision.

⚠Achtung

Die Verwendung anderer als der hier beschriebenen Steuerungen, Einstellungen oder Verfahren kann eine gefährliche Laserstrahlung hervorrufen. Der Kunde sollte unter keinen Umständen versuchen, den Laser-Scanner selbst zu warten. Sehen Sie niemals in den Laserstrahl, selbst wenn Sie glauben, daß der Scanner nicht aktiv ist. Öffnen Sie niemals den Scanner, um in das Gerät hineinzusehen. Wenn Sie dies tun, können Sie sich einer gefährlichen Laserstrahlung aussetzen. Der Einsatz optischer Geräte mit dieser Laserausrüstung erhöht das Risiko einer Sehschädigung.

⚠Attenzione

L'utilizzo di sistemi di controllo, di regolazioni o di procedimenti diversi da quelli descritti nel presente Manuale può provocare delle esposizioni a raggi laser rischiose. Il cliente non deve assolutamente tentare di riparare egli stesso lo scanner laser. Non guardate mai il raggio laser, anche se credete che lo scanner non sia attivo. Non aprite mai lo scanner per guardare dentro l'apparecchio. Facendolo potete esporVi ad una esposizione laser rischiosa. L'uso di apparecchi ottici, equipaggiati con raggi laser, aumenta il rischio di danni alla vista..

EMC

Emissions
FCC Part 15, ICES-003, CISPR 22, EN 55022

Immunity
CISPR 24, EN 55024

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Class A Devices

The following is applicable when the scanner cable is greater in length than 3 meters (9.8 feet) when fully extended:
Les instructions ci-dessous s'appliquent aux cables de scanner dépassant 3 métres (9.8 pieds) de long en extension maximale:
Folgendes trifft zu, wenn das Scannerkabel länger als 3 Meter ist:

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense. Any unauthorized changes or modifications to this equipment could void the user's authority to operate this device.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice
This Class A digital apparatus complies with Canadian ICES-003.

Remarque
Cet appareil numérique de classe A est conforme à la norme canadienne NMB-003.

European Standard

Warning This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Funkstöreigenschaften nach EN55022:1998

Warnung! Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen. In diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzuführen.

Standard Europeo

Attenzione Questo e' un prodotto di classe A. Se usato in vicinanza di residenze private potrebbe causare interferenze radio che potrebbero richiedere all'utilizzatore opportune misure.

Attention Ce produit est de classe "A". Dans un environnement domestique, ce produit peut être la cause d'interférences radio. Dans ce cas l'utiliseteur peut être amené à predre les mesures adéquates.

EMC

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Class B Devices

The following is applicable when the scanner cable is less than 3 meters (9.8 feet) in length when fully extended:

Les instructions ci-dessous s'appliquent aux cables de scanner ne dépassant pas 3 métres (9.8 pieds) de long en extension maximale:

Folgendes trifft zu, wenn das Scannerkabel kürzer als 3 Meter ist:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Notice

This Class B digital apparatus complies with Canadian ICES-003.

Remarque

Cet appareil numérique de classe B est conforme à la norme canadienne NMB-003.

WEIGHTS & MEASURES

Directive 90/384/EEC, OIML R76, NIST Handbook 44 (NTEP CC#03-056)

LIMITED WARRANTY

The MS2320 Stratos*H*® Series scanners are manufactured by Metrologic at its Suzhou, China facility. The MS2300 Stratos*H* Series scanners have a three (3) year limited warranty from the date of manufacture. Metrologic warrants and represents that all MS2320 Stratos*H* Series scanners are free of all defects in material, workmanship and design, and have been produced and labeled in compliance with all applicable U.S. Federal, state and local laws, regulations and ordinances pertaining to their production and labeling.

This warranty is limited to repair, replacement of product or refund of product price at the sole discretion of Metrologic. Faulty equipment must be returned to one of the following Metrologic repair facilities: Blackwood, New Jersey, USA; Madrid, Spain; or Suzhou, China. To do this, contact the appropriate Metrologic Customer Service/Repair Department to obtain a Returned Material Authorization (RMA) number.

In the event that it is determined the equipment failure is covered under this warranty, Metrologic shall, at its sole option, repair the Product or replace the Product with a functionally equivalent unit and return such repaired or replaced Product without charge for service or return freight, whether distributor, dealer/reseller, or retail consumer, or refund an amount equal to the original purchase price.

This limited warranty does not extend to any Product which, in the sole judgment of Metrologic, has been subjected to abuse, misuse, neglect, improper installation, or accident, nor any damage due to use or misuse produced from integration of the Product into any mechanical, electrical or computer system. The warranty is void if: (i) the case of the Product is opened by anyone other than Metrologic's repair department or authorized repair centers; or (ii) any software is installed on the Product other than a software program approved by Metrologic.

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PATENTS

Patent Information

This METROLOGIC product may be covered by, but not limited to, one or more of the following U.S. Patents:

U.S. Patent No.;

5,343,027; 5,627,359; 5,686,717; 5,789,731; 5,828,049; 6,029,894; 6,209,789; 6,299,065; 6,345,505; 6,422,467; 6,481,625; 6,494,377; 6,814,292; 6,830,190; 6,874,690; 6,918,540; 6,945,463; 6,951,304; 6,969,004; 6,975,456; 6,991,167; 7,051,922; 7,083,102; 7,086,597; 7,100,832; 7,152,795; 7,195,167; 7,296,748; 7,314,176; 7,341,192

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Other worldwide patents pending.

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